Evaluation Report of NIH K-12 Program

Title: Evaluation Report for the NIH5 Curriculum Supplement: *The Science of Mental Illness*

Date: 2003

Description:
This report evaluates one component within the NIH K-12 program, the NIH Curriculum Supplements. The NIH Curriculum Supplements are K-12 teacher's guides to two weeks' of lessons that explore the science behind current health topics. The modules are sent free of charge upon request to educators across the United States. Over 50,000 educators have one or more curriculum supplement.

This study specifically examines the results of the field tests conducted during the development of:

The Science of Mental Illness (Grades 6 – 8)

This study was designed to determine the effectiveness of the module as a supplementary addition in the K-12 science curriculum. The field test sites were selected from volunteers who were chosen to maximize inclusion of various races, ethnicities, and geographic regions. The evaluation consisted of a field test with close-to-complete instructional materials. The surveys measured student knowledge using a pre/post test. The teachers also commented on the effectiveness of the lessons and their implementation. These resulted were used to identify strengths that were highlighted and weaknesses that were corrected in the final draft. The teachers' comments were included in the final draft as "tips from teachers" on specific lessons.

Final Evaluation Report for the NIH5 Curriculum Supplement: *The Science of Mental Illness*

BSCS Evaluation Report ER 2003-03 May

Theodore A. Lamb
Molly McGarrigle
BSCS Center for Research & Evaluation
Biological Science Curriculum Studies
5415 Mark Dabling Blvd.
Colorado Springs, CO 80918-3842
719.531.5550

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For copies please contact: researchandevaluation@bscs.org

TABLE OF CONTENTS

Section I. Executive Summary

BSCS developed a learning module on "The Science of Mental Illness" funded by a grant from the National Institutes of Health. The evaluation study was designed to determine its effectiveness as supplementary material for middle school instructional materials. The sites were selected from volunteers who were selected to maximize inclusion of different races, ethnicities, geographic regions, and urban-suburban-rural schools.

There were 25 primary and secondary sites in the study. The primary site teachers received a field test orientation at BSCS and an honorarium to be in the study. Secondary site teachers received no orientation or funding but were interested in participating and thus were included. There were 14 primary site teachers and 890 primary site students in the study. There were 11 secondary site students and 676 secondary site students in the study. Missing materials (e.g., posttests) reduced the number for some analyses.

The evaluation consisted of a field test with close-to-complete instructional materials. Students and teachers completed evaluation questionnaires after using the materials in March and April, 2003. Tables 66-70 are brief "Evaluation Snapshots" of each lesson and are good starting points for developers. The comments on Lessons 1-5, in their totality, are included in Appendix G for the students and Appendix H for the teachers. These appendices also include comments to Most and Least Valuable Aspects of the Module and Suggestions for Changes. The developers are urged to review the comments to sample their diversity and depth to identify possible areas for revisions.

The Pretest-Posttest Evaluation consisted of results from the administration of Student Knowledge Surveys. Before using the materials the students took a Knowledge Survey and then the same survey again after completing the materials. The t-test results suggest statistically significant differences in the increases from pretest to posttest scores when all schools are combined. In addition, the teachers responded to questions about the success of the materials in achieving the learning outcomes. These results indicated high agreement with statements on the effectiveness of the module in achieving the established learning outcomes for each lesson. A response category of “Not Sure” which was available to students to indicate total lack of knowledge and blatant uncertainty was also examined and yielded a substantial reduction in frequency from pretest to posttest knowledge surveys.

The final sections briefly discuss the results and recommendations for the developers. General comments included:

- Lesson 4 needs revision. Lesson 5 rated the highest overall.
- Reading and difficulty levels were appropriate for the age group.
- The computer "zinger", playing intern, and the brochures were very effective activities.
- The lesson focuses on the physiological and psychological levels of analysis of mental illness. It could be improved by including the sociological level of analysis.
- Tailor future proposals to include modifications which enable access by persons with disabilities.

Section II. Background Information on the Project

A. Background and Goals of the Program

"The Science of Mental Illness" is a module created with funding from a grant from the Office of Science Education (OSE) in the National Institutes of Health (NIH). It is the fifth in a series of modules BSCS has developed for NIH.

The final product will be an instructional module composed of five lessons designed to be taught in sequence for approximately a week. It is intended to be a replacement for part of a standard curriculum in middle school. The final product is a print module which includes inquiry-based activities and supporting materials for the teacher, web activities which complement the module, and a plan for distribution and implementation of the completed modules.
The module is designed to accomplish the following:

- Provide students with an opportunity to apply creative and critical-thinking skills as a way of discovering solutions to a wide range of problems,
- Deepen students' understanding of the importance of basic research to advances in medical and health sciences,
- Show students the direct and indirect effects of scientific discoveries on their lives and their health,
- Stimulate students' interest in medical topics,
- Help science teachers improve the quality of science education,
- Reach the general public, particularly parents, through the schools,
- Support the implementation of the National Science Education Standards, and
- Promote the visibility and mission of individual institutes and centers and the NIH,
- Provide state-of-the-art knowledge in mental health by focusing the module on depression, ADHD, and schizophrenia.

B. The Curriculum Development Process.

BSCS uses a curriculum development process that involves an advisory board, an external design team, and an internal writing team. In the Initial Phase, an Advisory Board meeting of experts in the field is convened at the beginning of the development process to identify the key or critical areas of study in the field as well as the key concepts to be conveyed in the materials. Resources are also sought from the Advisory Board. Next, in the Content Review Phase, an external design team of subject matter experts and teachers at the appropriate grade level is brought together for several days of brainstorming and writing. This team, with the input of the Advisory Board, designs the activities and addresses options for structuring the materials. Some writing may be done but that is not the major objective. The Materials Development Phase is next. After input is gained from the Advisory Board and the external Design Team, the BSCS curriculum developers begin the serious task of putting structure and form to the materials and various activities. We then have a Field Test Phase in which the materials are tested with a national sample. The Evaluation Phase consists of analyzing and reporting the results of the Field Test. These evaluation results are used in revisions to the materials, sometimes minor, sometimes major. This is followed by the Final Production and Distribution Phase in which the final copies of the materials are generated and disseminated.

In order to facilitate the work of the Advisory Board we developed and administered an Advisory Board Evaluation Form (Appendix A). No analysis was performed on the responses generated with these forms. They simply provided input to the project director about how well the meetings went and what modifications to consider for future meetings.

C.. The Instructional Materials in the Module

The final product is suitable for use with any middle school biology program. There are five lessons:

1. The Brain: Control Center
2. What's Wrong?
3. Mental Illness: Could It Happen to Me?
4. Treatment Works!
5. You're the Expert Now

Each lesson contains readings and activities. There is a website for resources and activities. Additionally, there are Teacher Background Materials to increase the ability of the teachers to use the materials effectively in the classroom.

The materials are designed to incorporate an inquiry-based approach, the 5E model: Engage, Explore, Explain, Elaborate, and Evaluate (Bybee, 1997).

D. Teachers, Students, and Test Sites

Primary Field Test Teachers. Field test teachers were recruited by several methods, including an advertisement placed at the BSCS website, letters of invitation to teachers who had participated in previous BSCS field tests, a notice in the BSCS newsletter, and an ad in The American Biology Teacher published by the National Association of Biology Teachers (NABT). We asked interested teachers to complete a teacher background survey to determine their level of interest and commitment and whether they would be teaching appropriate classes during the test period. The background surveys were reviewed by the project director and staff biologist, selected the participants, and then contacted the teachers to see if they still wanted to participate in the study. One essential criterion was whether or not the teacher had the necessary computer resources available. Additionally, even though by using volunteers we would never have a truly representative sample of schools or school districts, the staff made a concerted attempt to assure inclusion in the selection process by selecting schools that had diverse student populations and represented a variety of economic and geographic contexts.

In January, 2003, the fourteen selected teachers were brought to BSCS for a 2-day Field Test Orientation. During the orientation the staff introduced the teachers to the key features of the science content and specific activities of the module. The project supported all travel expenses and the participants received an honorarium of $300.00. After they used the module and BSCS had received the evaluation materials they received an additional honorarium of $400.00.

Secondary Field Test Teachers. There were more teachers who wanted to be in the field test than we had resources to accommodate. In these cases we sent the materials to the teachers and asked that they use them according to the guidelines in the Teacher Background Materials. These teachers did not receive honoraria and did not participate in a field test orientation. We thought this was an additional useful test of the materials which perhaps more accurately portrayed how they would be used by most teachers.

Students in the Field Test. The students at the primary test sites ranged from 6th to 8th graders in middle school. There were 14 primary test schools in the study from school districts in Montana, Colorado, South Dakota, Connecticut, Maryland, Tennessee, Iowa, Texas, Arizona, and California. Figure 1 depicts the dispersed locations of the primary field test sites nationally.

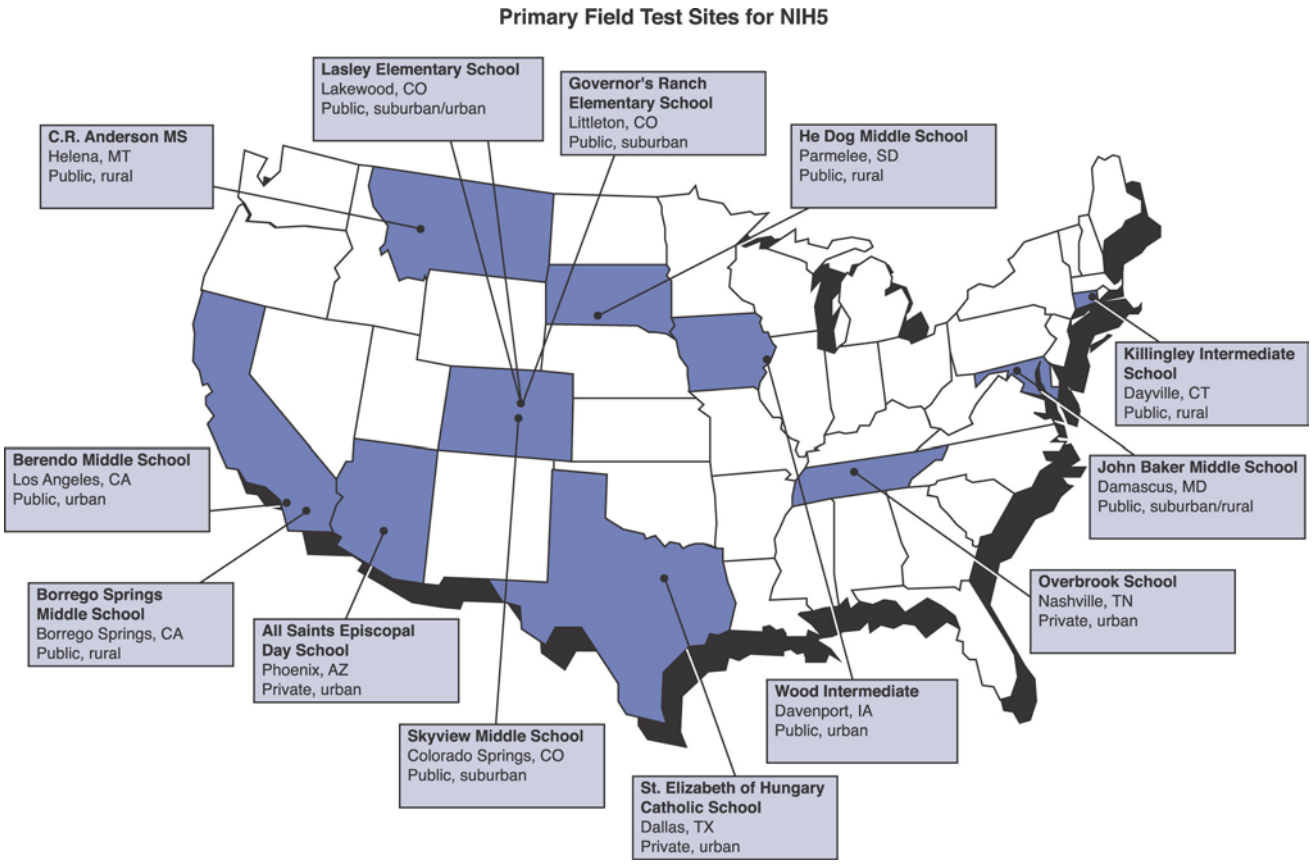
Tables 1 and 2 depict the demographic information for the schools in the field test with approximate breakdowns of race/ethnicity using U.S. Census Bureau categories. These data come from the responses given by the students. Separate results are presented for the Primary site schools

because they were used to assure inclusion of diverse groups. Totals for the Primary site schools as well as the Primary plus Secondary Site schools are included. The analyses in subsequent sections used the Primary plus Secondary site schools.

Table 1. Population Characteristics of Primary Site Schools in the Field Test n=12 and Totals for Primary & Primary plus Secondary Site Schools

School	n	% Asian	% Afr Amer	% Amer Ind	% White	% Nat Haw	% other (Hisp)	% 2 or more	% Female/ % Male	% 6th/7th/8th Graders
Berendo MS	138	.7	0	0	.7	0	97.1	1.4	55/45	0/100/0
Killingly Int.	97	4.2	4.2	1.0	71.9	0	10.4	8.3	47/53	0/100/0
All Saints Episcopal	58	8.6	1.7	0	75.9	1.7	3.4	8.6	40/60	0/100/0
Overbrook School	104	1.0	1.0	0	95.1	0	1.0	1.0	68/32	37/23/40
Lasley (Bowden)	31	9.7	0	0	38.7	0	29.0	22.6	45/55	100/0/0
Lasley (Fleming)	29	3.4	0	3.4	62.1	0	10.3	20.7	48/52	100/0/0
CR Anderson MS	126	0	0	7.1	82.5	2.4	2.4	2.4	55/45	0/99/1
St. Elizabeth of Hungary	57	1.8	10.7	0	44.6	0	19.6	23.2	53/47	0/51/49
Governor's Ranch	25	0	0	0	80	0	4	16	44/56	100/0/0
Borrego Springs MS	93	0	0	1.1	23.9	0	65.9	9.1	52/48	34/38/28
Skyview MS	46	0	10.9	0	67.4	4.3	6.5	10.9	50/50	0/100/0
Wood Int.	81	1.2	14.8	0	70.4	0	2.5	11.1	51/49	0/100/0
TOTALS FOR ALL Primary SITES	884	1.8	3.4	1.4	57.0	7	27.1	8.7	52.7/47.3	17/72/11
TOTALS FOR ALL SITES (Primary & Secondary)	1559	1.9	2.6	1.2	69.8	.4	16.3	7.8	52.1/47.9	14/56/30

Figure 1. Primary Field Test Sites



Section III. Description of the Evaluation Study

A. Purposes of the Evaluation

The evaluation had two primary purposes. The first is to gather evaluation data about the functionality and usability of the materials. The curriculum developers use formative evaluation findings to revise and improve the final version of the module. The second is to gather preliminary information about the module's effectiveness in achieving the learning outcomes.

B. Evaluation Design

1. Materials Evaluation Design. There are two primary sources of data specifically on the materials: the Teacher Evaluation of the Materials Survey (TEMS) and the Student Evaluation of the Materials Survey (SEMS). Appendix B contains the instructions we gave to the teachers to facilitate their

administration of the surveys. Appendices E and F contain copies of the TEMS and SEMS respectively. The TEMS contains a series of questions on the following topics for each lesson in the module:

- General Questions on the Lesson
- Graphics in the Student Materials
- Format of the Student Materials
- Organization of the Student Materials
- Relevance of the Student Materials
- Effectiveness of the Lesson in Achieving Learning Outcomes
- the Website
- Effectiveness of the Activities
- Teacher Background Materials

Teachers responded to questions about each of these topics on a scale of Strongly Agree to Strongly Disagree (or Very Effective to Very Ineffective) and have space to make comments or elaborate on their ratings.

At the end of the TEMS we ask questions about the overall difficulty of the module, the 5E goal of the lesson, what the most and least valuable aspects were of the module. We also ask the teachers to make specific suggestions to the curriculum developers to improve the module.

The SEMS has a reduced number of topics and items to which the students respond. Similar to the TEMS, we ask the students to respond to items on the following topics for each lesson in the module:

- General Questions on the Lesson,
- Graphics in the Student Materials, and
- the Website.

The students also have opportunities to make comments about the module and activities, rate the difficulty of the module, identify the main strengths and weaknesses of the module, and make specific suggestions to the developers.

2. Pretest and Posttest Evaluation Design. Student Data. The evaluation focuses on how effectively the materials helped the students achieve the learning outcomes for each lesson. The present study uses the "One-Group Pretest-Posttest Design" articulated by Campbell and Stanley (1963).

Campbell and Stanley represent the design as:

$$O_1 \longrightarrow X \longrightarrow O_2$$

The initial Observation (O_1) is the pretest, which is followed by administration of the experimental treatment (X) and then the second Observation (O_2) or posttest.

Our initial observation (O_1) is the Student Knowledge Survey 1 (SKS1) a pretest of student knowledge on the brain that teachers gave their students before any exposure to the materials. Teachers then taught the module in their classes until completed. This essentially is the classic experimental treatment (or X in Campbell and Stanley's diagram). The second observation (O_2) is a posttest composed of the same items as the pretest. These items are contained in our Student Knowledge Survey 2. Teachers administered the survey to students at the end of the field test. Appendix F contains copies of these surveys. The students answered True or False to statements from which we determined their pretest and posttest scores. In addition, they were given the option, in both the pretest and posttest of answering "Not Sure" on the items in order to estimate the level of sureness they had with their answers.

This type of scoring is often termed "ipsative", that is, the norm or comparison against which the student is measured is their own prior performance (a pretest). The present performance (a posttest) is compared to the prior performance. In essence, the posttest is the student's "personal best" although it may not be the best in the class. This type of assessment is useful because of the different of levels of knowledge or ability at which students enter a class (or use an instructional module).

3. Learning Outcome Effectiveness Evaluation. Teacher Data. The effectiveness evaluation also contains a second source of data. The teachers use the TEMS to make judgments on how effectively the materials achieved each lessons learning outcomes. Achieving these learning outcomes is the ultimate goal of each lesson. Their answers provide an additional source of evaluation data.

Section IV. Results

A. Surveys Returned. The module was tested in 25 schools. We received a total of 1566 complete student survey sets. A student survey set consists of a SEMs, an SKS1, and an SKS2. We needed all three for complete analysis of the student data. Two primary sites and one secondary site (He Dog, John Baker, and Berwick Academy respectively) did not administer the posttest therefore are not included in the results. All teachers except for one secondary site (Catlin Gable) returned the TEM survey, therefore the teacher n=24.

B. Demographic Results from Surveys Returned. The student surveys from all the schools in the field test yielded the following results: Female 52.1 % and Male 47.9 %. All results include both primary and secondary site schools.

Table 2. Pie Chart of Gender Percentages.

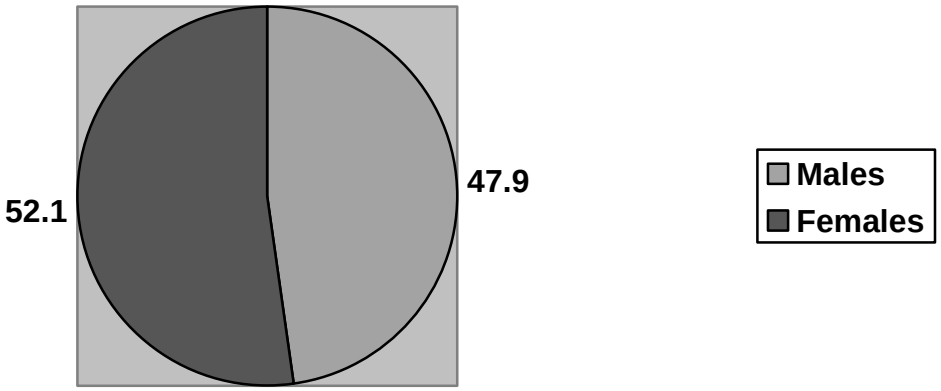


Table 3 depicts the results from the student surveys from all schools for the question on "Race/Ethnicity":

Table 3. Percentages in Census Bureau Categories.

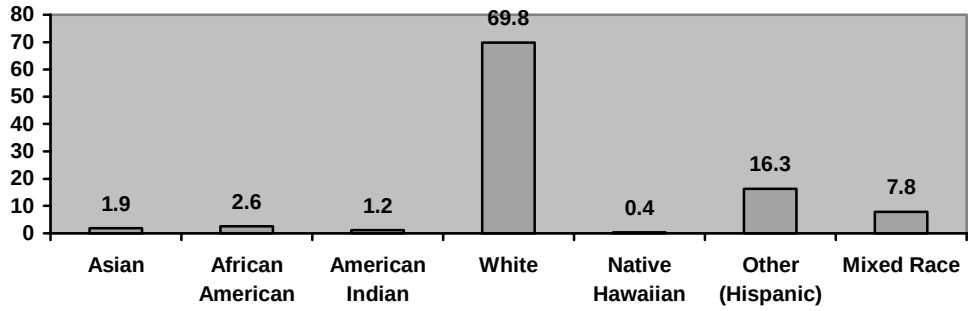


Table 4. Percentages of Students in Different Grade Levels.

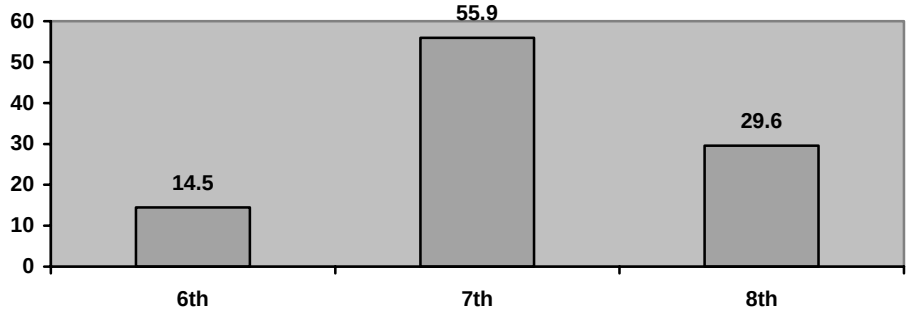


Table 5. Student Interest in Science: Percentages of Responses

	Strongly Disagree 1	Disagree 2	Disagree a Little 3	Agree a Little 4	Agree 5	Strongly Agree 6	Mean	Standard Deviation
1. I am interested in science, in general.	5.0	4.8	9.3	25.5	37.6	17.7	4.39	1.29
2. I am very interested in Biology.	6.9	11.8	18.9	30.8	18.9	12.6	3.81	1.39
3. I am good at science, in general.	5.1	7.4	13.4	27.1	33.0	14.0	4.18	1.32

C. Results of the Materials Evaluation

The evaluation results come from questionnaires completed by the teachers and the students. Appendices D and G contain copies of the questionnaire for each group. The questionnaires were completed after the they had completed using the materials or while they were using the materials. There are demographic questions, fixed-response questions, and open-ended questions on both questionnaires.

The students responded to three sets of questions for each lesson. There were questions on the:

- Text-based Materials,
- Graphic Content of the Text-based Materials, and the
- Website.

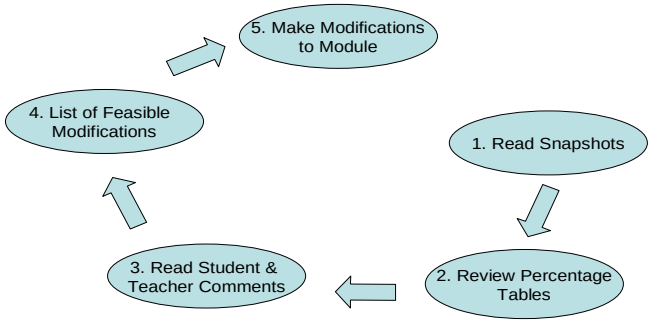
The students indicated their level of agreement or disagreement from strongly agree to strongly disagree with statements in each section. The Tables in the following section provide the results in terms of the percentage of students who indicated which response. In addition, the items are assigned a value: Strongly Disagree = 1, Disagree = 2, Disagree a Little = 3, Agree a Little = 4, Agree = 5, and Strongly Agree = 6. With these values means and standard deviations were calculated and also are reported.

In addition, the students were able and encouraged to make comments on any question in the survey on all lessons. Those comments, in their totality, for all lessons are included in Appendix I. The students were also asked to estimate the overall level of difficulty of the module, identify the main strengths and weaknesses of the module, and make specific suggestions for the developers to improve the module.

Utilization of Evaluation Results by Curriculum Developers. This report is composed of a great deal of different types of information. The figure below is a suggestion for the developers to consider as they review the evaluation results to assist in making improvements to the module. It is suggested, as depicted in Figure 2, that developers:

1. Review the Evaluation Snapshots in Tables 65-70, going on to
2. Review of the Student and Teacher Percentage Tables in Tables 3-62, then
3. Read the Comments by Students and Teachers in Appendices I and J, and
4. Make a list of possible modifications to the module when factors such as feasibility, time, and cost are weighed, and finally
5. Make the modifications to the module within the time constraints of the project.

Figure 2. Utilization of Evaluation Results



1. Student Results on the Materials Evaluation.

Lesson 1 Evaluation Results from Students. The results for Lesson 1 are presented in three tables: one for the General Questions on Lesson 1, one for the Graphics Content Questions, and one for the Website items. This is followed by the difficulty level results for the lesson.

Table 6. General Questions on Lesson 1: *The Brain: Control Center*

	Strongly Disagree 1	Disagree 2	Disagree a Little 3	Agree a Little 4	Agree 5	Strongly Agree 6	Mean	Standard Deviation
1. The lesson was interesting.	2.5	3.0	8.7	26.1	39.9	19.8	4.57	1.14
2. I could read the material easily	1.4	3.0	8.1	19.5	39.1	28.8	4.78	1.12
3. I could understand the examples and explanations.	1.3	2.1	8.5	20.5	42.3	25.2	4.76	1.07
4. The lesson made me think about new things and questions.	3.7	4.3	8.7	21.8	33.2	28.2	4.61	1.30
5. I could understand the scientific information easily.	3.0	3.2	10.7	28.4	35.1	19.6	4.48	1.19

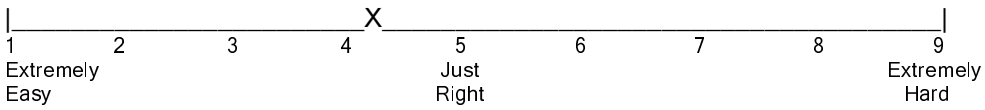
Table 7. Graphics in the Student Materials in Lesson 1

	Strongly Disagree 1	Disagree 2	Disagree a Little 3	Agree a Little 4	Agree 5	Strongly Agree 6	Mean	Standard Deviation
1. The graphics were clear and meaningful.	2.4	3.6	9.2	27.7	39.8	17.4	4.51	1.13
2. The graphics helped me understand the material covered.	2.4	3.3	9.0	25.6	39.7	20.0	4.57	1.15
3. The graphics encouraged me to think, discuss, solve problems, and ask questions.	3.8	6.2	13.9	30.6	31.0	14.5	4.22	1.26
4. The graphics encouraged me to read the text.	10.5	8.2	16.1	26.7	26.5	12.0	3.87	1.47
5. The graphics were interesting.	4.8	5.1	10.2	23.5	32.7	23.8	4.46	1.34

Table 8. Website Questions on Lesson 1

	Strongly Disagree 1	Disagree 2	Disagree a Little 3	Agree a Little 4	Agree 5	Strongly Agree 6	Mean	Standard Deviation
1. The website was clearly connected to the lesson.	3.7	3.4	8.1	18.6	35.7	30.4	4.71	1.28
2. I was able to navigate easily in the website without confusion.	3.9	4.6	9.3	20.8	33.6	27.8	4.59	1.32
3. The website made the lesson more understandable.	3.6	4.6	7.9	19.6	33.9	30.4	4.67	1.30
4. The website made the lesson more interesting.	4.3	3.2	5.1	19.4	28.8	39.2	4.83	1.32

Lesson 1 Difficulty. The scale used for the difficulty of each lesson was a line across the page with three easily identifiable equidistant points for the students to mark a judgment. At the left extreme was 1 = Extremely Easy, in the middle 5 = Just Right, and at the right extreme 9 = Extremely Hard. The lesson 1 difficulty mean = 4.22, std. dev. = 1.648.



2 Evaluation Results from Students. The results for Lesson 2 are presented in three tables: one for the General Questions on Lesson 2, one for the Graphics Content Questions, and one for the Website items. This is followed by the difficulty level results for the lesson.

Table 9. General Questions on Lesson 2: *What's Wrong?*

	Strongly Disagree 1	Disagree 2	Disagree a Little 3	Agree a Little 4	Agree 5	Strongly Agree 6	Mean	Standard Deviation
1. The lesson was interesting.	3.2	4.4	8.3	23.8	36.4	23.9	4.58	1.30
2. I could read the material easily	1.3	2.4	6.2	21.2	40.5	28.4	4.82	1.07
3. I could understand the examples and explanations.	1.3	2.4	7.4	21.2	41.6	26.0	4.77	1.07
4. The lesson made me think about new things and questions.	3.4	6.0	10.1	25.6	32.4	22.4	4.45	1.29
5. I could understand the scientific information easily.	2.3	3.3	9.5	25.1	36.7	23.2	4.60	1.17

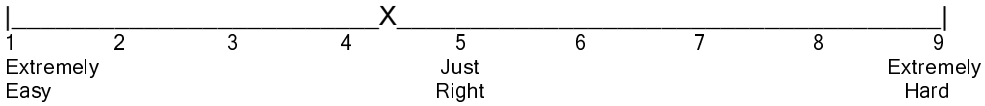
Table 10. Graphics in the Student Materials in Lesson 2

	Strongly Disagree 1	Disagree 2	Disagree a Little 3	Agree a Little 4	Agree 5	Strongly Agree 6	Mean	Standard Deviation
1. The graphics were clear and meaningful.	2.8	4.6	9.8	25.3	39.9	17.6	4.48	1.19
2. The graphics helped me understand the material covered.	2.0	4.2	10.2	24.4	37.9	21.3	4.56	1.17
3. The graphics encouraged me to think, discuss, solve problems, and ask questions.	4.6	8.1	11.8	29.3	29.4	16.8	4.21	1.33
4. The graphics encouraged me to read the text.	5.9	7.8	13.6	26.6	31.1	14.9	4.14	1.37
5. The graphics were interesting.	4.8	5.8	8.5	23.0	33.7	24.3	4.48	1.35

Table 11. Website Questions on Lesson 2

	Strongly Disagree 1	Disagree 2	Disagree a Little 3	Agree a Little 4	Agree 5	Strongly Agree 6	Mean	Standard Deviation
1. The website was clearly connected to the lesson.	2.7	3.8	7.3	19.1	36.9	30.2	4.74	1.22
2. I was able to navigate easily in the website without confusion.	2.8	4.4	9.2	20.0	36.0	27.5	4.65	1.25
3. The website made the lesson more understandable.	1.9	4.5	6.4	21.5	36.4	29.4	4.74	1.19
4. The website made the lesson more interesting.	3.8	4.4	8.0	19.0	27.2	37.7	4.74	1.35

Lesson 2 Difficulty. The scale used for the difficulty of each lesson was a line across the page with three easily identifiable equidistant points for the students to mark a judgment. At the left extreme was 1 = Extremely Easy, in the middle 5 = Just Right, and at the right extreme 9 = Extremely Hard. The lesson 1 difficulty mean = 4.35, std. dev. = 1.60.



Lesson 3 Evaluation Results from Students. The results for Lesson 3 are presented in three tables: one for the General Questions on Lesson 31 and one for the Graphics Content Questions. This is followed by the difficulty level results for the lesson.

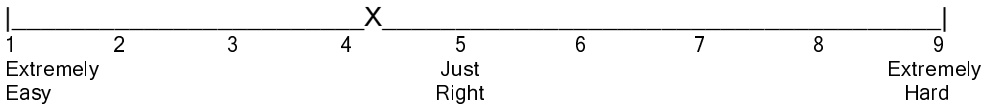
Table 12. General Questions on Lesson 3: *Mental Illness: Could It Happen to Me?*

	Strongly Disagree 1	Disagree 2	Disagree a Little 3	Agree a Little 4	Agree 5	Strongly Agree 6	Mean	Standard Deviation
1. The lesson was interesting.	3.7	3.6	7.7	22.3	34.8	28.0	4.65	1.26
2. I could read the material easily	1.1	2.1	6.7	19.4	39.9	30.8	4.87	1.06
3. I could understand the examples and explanations.	1.3	3.2	6.5	19.6	40.6	28.8	4.81	1.10
4. The lesson made me think about new things and questions.	3.8	5.7	11.9	23.7	31.1	23.8	4.44	1.33
5. I could understand the scientific information easily.	2.4	3.1	8.3	23.1	35.1	28.0	4.69	1.19

Table 13. Graphics in the Student Materials in Lesson 3

	Strongly Disagree 1	Disagree 2	Disagree a Little 3	Agree a Little 4	Agree 5	Strongly Agree 6	Mean	Standard Deviation
1. The graphics were clear and meaningful.	4.4	5.3	9.2	25.3	36.1	19.7	4.42	1.29
2. The graphics helped me understand the material covered.	3.2	4.9	9.7	25.6	36.9	19.7	4.47	1.23
3. The graphics encouraged me to think, discuss, solve problems, and ask questions.	6.1	6.0	14.2	27.4	30.4	15.9	4.18	1.36
4. The graphics encouraged me to read the text.	6.7	7.4	14.8	25.1	29.9	16.1	4.12	1.41
5. The graphics were interesting.	5.8	5.3	9.0	23.5	32.0	24.3	4.44	1.39

Lesson 3 Difficulty. The scale used for the difficulty of each lesson line across the page with three easily identifiable equidistant points for the students to mark a judgment. At the left extreme was 1 = Extremely Easy, in the middle 5 = Just Right, and at the right extreme 9 = Extremely Hard. The lesson 1 difficulty mean = 4.18, std. dev. = 1.685.



Lesson 4 Evaluation Results from Students. The results for Lesson 4 are presented in three tables: one for the General Questions on Lesson 4 and one for the Graphics Content Questions. This is followed by the difficulty level results for the lesson.

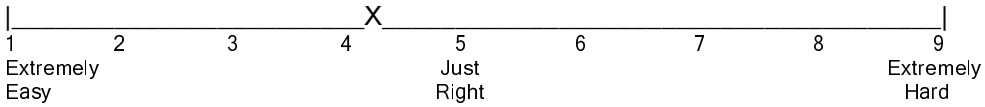
Table 14. General Questions on Lesson 4: *Treatment Works!*

	Strongly Disagree 1	Disagree 2	Disagree a Little 3	Agree a Little 4	Agree 5	Strongly Agree 6	Mean	Standard Deviation
1. The lesson was interesting.	5.5	6.7	9.6	23.2	33.2	21.8	4.37	1.39
2. I could read the material easily	1.3	3.5	7.9	20.4	38.8	28.2	4.76	1.13
3. I could understand the examples and explanations.	1.6	2.6	8.5	21.7	40.6	24.9	4.72	1.11
4. The lesson made me think about new things and questions.	5.6	6.4	12.5	23.6	30.8	21.0	4.31	1.39
5. I could understand the scientific information easily.	2.7	3.8	7.0	22.7	38.1	25.8	4.67	1.20

Table 15. Graphics in the Student Materials in Lesson 4

	Strongly Disagree 1	Disagree 2	Disagree a Little 3	Agree a Little 4	Agree 5	Strongly Agree 6	Mean	Standard Deviation
1. The graphics were clear and meaningful.	5.2	5.2	10.8	21.7	35.7	21.4	4.42	1.35
2. The graphics helped me understand the material covered.	4.4	4.9	8.8	26.1	35.5	20.4	4.45	1.28
3. The graphics encouraged me to think, discuss, solve problems, and ask questions.	6.7	7.3	13.8	26.7	29.6	16.0	4.13	1.40
4. The graphics encouraged me to read the text.	8.8	8.2	14.7	25.2	28.2	15.0	4.01	1.47
5. The graphics were interesting.	6.7	4.6	10.7	21.9	32.3	23.8	4.40	1.42

Lesson 4 Difficulty. The scale used for the difficulty of each lesson was a line across the page with three easily identifiable equidistant points for the students to mark a judgment. At the left extreme was 1 = Extremely Easy, in the middle 5 = Just Right, and at the right extreme 9 = Extremely Hard. The lesson 1 difficulty mean = 4.18, std. dev. = 1.706.



Lesson 5 Evaluation Results from Students. The results for Lesson 5 are presented in three tables: one for the General Questions on Lesson 5 and one for the Graphics Content Questions. This is followed by the difficulty level results for the lesson.

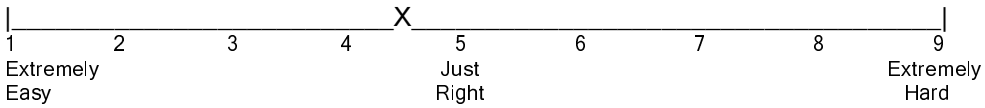
Table 16. General Questions on Lesson 5: *You're the Expert Now*

	Strongly Disagree 1	Disagree 2	Disagree a Little 3	Agree a Little 4	Agree 5	Strongly Agree 6	Mean	Standard Deviation
1. The lesson was interesting.	4.0	3.3	8.7	17.6	36.5	29.9	4.69	1.29
2. I could read the material easily.	1.1	2.9	6.0	18.6	40.2	31.2	4.88	1.08
3. I could understand the examples and explanations.	1.4	2.4	6.8	21.0	37.8	30.7	4.83	1.10
4. The lesson made me think about new things and questions.	4.1	6.9	12.1	21.5	29.7	25.7	4.43	1.38
5. I could understand the scientific information easily.	2.4	2.2	7.4	18.0	38.1	32.0	4.83	1.16

Table 17. Graphics in the Student Materials in Lesson 5

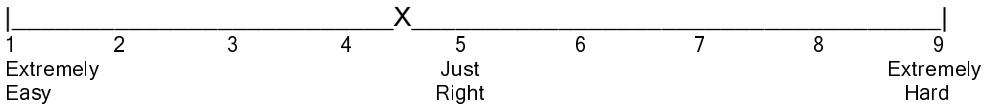
	Strongly Disagree 1	Disagree 2	Disagree a Little 3	Agree a Little 4	Agree 5	Strongly Agree 6	Mean	Standard Deviation
1. The graphics were clear and meaningful.	4.1	4.7	8.6	21.4	37.4	23.7	4.55	1.30
2. The graphics helped me understand the material covered.	3.9	4.2	9.1	22.1	36.8	23.8	4.55	1.28
3. The graphics encouraged me to think, discuss, solve problems, and ask questions.	6.1	6.4	13.6	24.9	30.8	18.3	4.23	1.39
4. The graphics encouraged me to read the text.	6.5	7.1	13.5	23.5	30.6	18.8	4.21	1.42
5. The graphics were interesting.	5.2	4.3	10.1	18.1	34.0	28.3	4.56	1.38

Lesson 5 Difficulty. The scale used for the difficulty of each lesson a line across the page with three easily identifiable equidistant points for the students to mark a judgment. At the left extreme was 1 = Extremely Easy, in the middle 5 = Just Right, and at the right extreme 9 = Extremely Hard. The lesson 1 difficulty mean = 4.35, std. dev. = 1.730.



Overall Module Results.

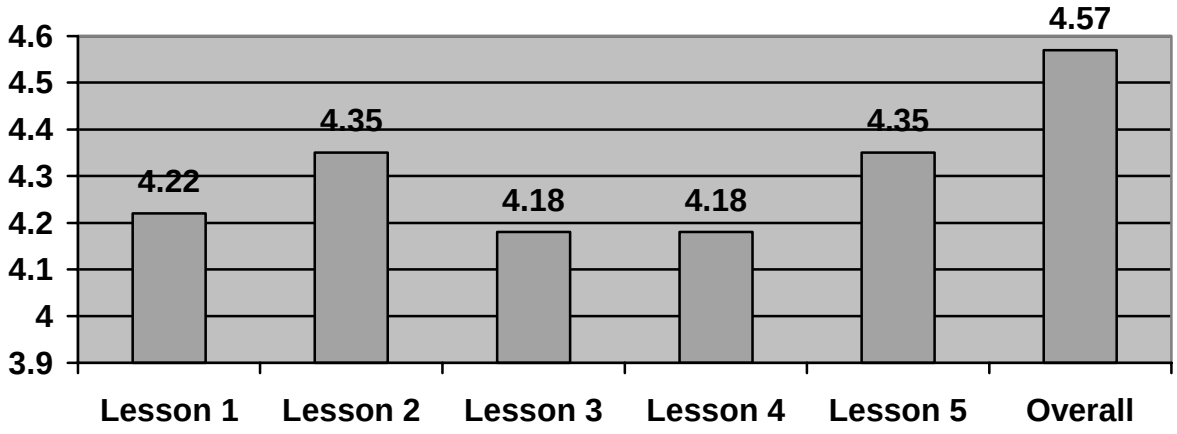
Module Difficulty. The students were also asked about the overall difficulty of the module. They rated the difficulty on a scale of 1 to 9 in which 1=too easy, 5=just right, and 9=too hard. The average level of difficulty was 4.57, std. dev. = 1.580.



Most and Least Valuable Aspects of the Module and Suggestions for Improvements. The students were asked to respond to an open-ended question on the most and least valuable aspects of the module and suggestions for improvements in the module. These comments, in their totality, are included in Appendix G.

Lesson Comparisons on Level of Difficulty from Students. The lessons each have scores from the students on several dimensions. Table 22 depicts the mean difficulty scores for each lesson. All scores were slightly below the ideal score of "Just Right" (i.e., 5).

Table 22. Comparison of Lesson Levels of Difficulty: Student Results



2. Teacher Results on the Materials Evaluation.

Evaluation Results from Teachers. The teachers completed a "Teacher Evaluation of the Materials Survey" or TEMS. This survey had a page of general information about their classes and how they used the materials. The TEMS had more items for the teachers to respond to such as format, organization, and instructional design of the materials as well as the overall questions on the module.

Evaluation Results for Each Lesson from the Teachers. The results for each lesson are presented in eight tables: Text-Based Materials, Graphics Content items, Format of the Text-Based Materials, Organization of the Text-based Materials, Instructional Design of the Text-based Materials, Relevance of the Text-based Materials, Website, and Effectiveness in Achieving Learning Outcomes. In addition, there is a Table of Results of reviews of the comments made by teachers on each lesson. This is followed by a Table comparing the teacher results for each lesson.

Table 19. General Questions on Lesson 1: *The Brain: Control Center* Teacher Results

	Strongly Disagree 1	Disagree 2	Disagree a Little 3	Agree a Little 4	Agree 5	Strongly Agree 6	Mean	Standard Deviation
1. The content was accurate and current.	0	0	0	4.3	56.5	39.1	5.35	.57
2. The reading level was appropriate for my students.	0	0	8.7	8.7	56.5	26.1	5.00	.85
3. The examples and explanations were appropriate for my students.	0	0	0	20.8	58.3	20.8	5.00	.70
4. The amount of prerequisite knowledge required to understand the lesson was acceptable.	0	0	0	12.5	58.3	29.2	5.17	.64
5. Students could understand the scientific content clearly.	0	0	4.3	8.7	65.2	21.7	5.04	.71
6. The lesson contained an appropriate amount of content.	0	0	8.7	4.3	69.6	17.4	4.96	.77
7. The lesson promoted thinking, inquiry, and study skills.	0	4.3	4.3	26.1	43.5	21.7	4.74	1.01
8. The lesson was engaging (that is, it got students more interested in the science content).	0	4.3	4.3	21.7	21.7	47.8	5.04	1.15
9. The lesson took an inquiry-oriented approach.	0	0	4.3	21.7	47.8	26.1	4.96	.83
10. The lesson could replace my existing materials.	0	0	4.8	38.1	52.4	4.8	4.57	.68

Table 20. Graphics Questions on Lesson 1: Teacher Results

	Strongly Disagree 1	Disagree 2	Disagree a Little 3	Agree a Little 4	Agree 5	Strongly Agree 6	Mean	Standard Deviation
1. The graphics were clear and meaningful.	0	0	8.3	4.2	45.8	41.7	5.21	.88
2. The graphics helped students understand the material.	0	0	0	4.2	58.3	37.5	5.33	.57
3. The graphics promoted student thinking, discussion, problem solving, and inquiry.	0	0	0	16.7	62.5	37.5	5.21	.72
4. The graphics motivated students to read the text.	0	0	21.1	36.8	31.6	10.5	4.32	.95
5. The graphics were engaging (that is, they got the students doing interesting things).	0	0	4.2	20.8	37.5	37.5	5.08	.88

Table 21. Format of the Student Materials Questions on Lesson 1: Teacher Results

	Strongly Disagree 1	Disagree 2	Disagree a Little 3	Agree a Little 4	Agree 5	Strongly Agree 6	Mean	Standard Deviation
1. The layout was visually interesting and easy to read.	0	0	4.2	4.2	62.5	29.2	5.17	.70
2. The sizes and types of fonts were appropriate.	0	0	0	0	58.3	41.7	5.42	.50

Table 22. Organization of Student Materials Questions on Lesson 1: Teacher Results

	Strongly Disagree 1	Disagree 2	Disagree a Little 3	Agree a Little 4	Agree 5	Strongly Agree 6	Mean	Standard Deviation
1. Organization of the text promoted learning.	0	0	5.0	30.0	45.0	20.0	4.80	.83
2. The main concepts were presented logically.	0	0	0	4.2	70.8	25.0	5.21	.51
3. Content was presented at an appropriate pace.	0	0	4.2	16.7	45.8	33.3	5.08	.83

Table 23. Relevance of the Student Materials Questions on Lesson 1: Teacher Results

	Strongly Disagree 1	Disagree 2	Disagree a Little 3	Agree a Little 4	Agree 5	Strongly Agree 6	Mean	Standard Deviation
1. Content was related to real-life examples and/or students' lives.	0	0	4.2	12.5	50.0	33.3	5.13	.80

Table 24. Effectiveness of Lesson 1 in Achieving Learning Outcomes: Teacher Results

	Very Ineffective 1	Ineffective 2	Mod. Ineffective 3	Mod. Effective 4	Effective 5	Very Effective 6	Mean	Std. Dev.
1. Students should be able to explain that the brain is the part of the body that controls behavior, emotions, and thoughts.	0	0	0	12.5	33.3	54.2	5.42	.72
2. Students should realize that some changes in brain function cause changes in behavior, emotions, or thoughts that can last a short or a long time.	0	0	0	12.5	33.3	54.2	5.42	.72
3. Students should recognize that mental illnesses are associated with changes in brain activity.	0	0	0	16.7	54.2	45.8	5.29	.75

Table 25. Website Questions on Lesson 1: Teacher Results

	Strongly Disagree 1	Disagree 2	Disagree a Little 3	Agree a Little 4	Agree 5	Strongly Agree 6	Mean	Standard Deviation
1. The website was clearly connected to the lesson.	0	0	10.0	0	35.0	55.0	5.35	.93
2. The students were able to navigate easily in the website without confusion.	0	0	6.3	12.5	37.5	43.8	5.19	.91
3. The website made the lesson more understandable.	0	0	10.5	5.3	36.8	47.4	5.21	.98
4. The website made the lesson more interesting.	0	0	10.5	0	31.6	57.9	5.37	.96

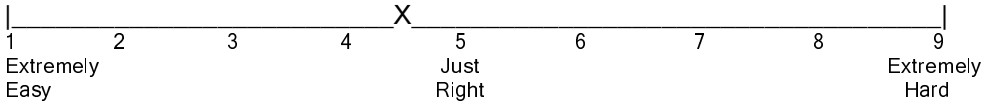
Table 26. Effectiveness of Activities in Lesson 1: Teacher Results

	Very Ineffective 1	Ineffective 2	Mod. Ineffective 3	Mod. Effective 4	Effective 5	Very Effective 6	Mean	Std. Dev.
1. Activity 1-1, *Email from a Friend & Find the Mistakes.*	0	4.3	4.3	17.4	17.4	56.5	5.17	1.15
2. Activity 1-2, *What Do You Know?*	0	0	0	31.8	45.5	22.7	4.91	.75
3. Activity 1-3*, What's Happening in the Brain?*	0	0	8.3	4.2	50.0	37.5	5.17	.87

Table 27. Teacher Background Materials for Lesson 1: Teacher Results

	Strongly Disagree 1	Disagree 2	Disagree a Little 3	Agree a Little 4	Agree 5	Strongly Agree 6	Mean	St. Dev
1. The teacher's background materials helped me better understand and support the lesson.	0	0	0	4.2	33.3	62.5	5.58	.58
2. The implementation materials helped me conduct the learning activities.	0	0	0	0	70.8	29.2	5.29	.46
3. The relationship between the NSES's content and lesson-specific concepts were clearly presented in the teacher background materials.	0	0	0	8.3	54.2	37.5	5.29	.62

Lesson 1 Difficulty for the Student as Rated by Teachers. The scale used for the difficulty of each lesson was a line across the page with three easily identifiable equidistant points for the teachers to mark a judgment. At the left extreme was 1 = Extremely Easy, in the middle 5 = Just Right, and at the right extreme 9 = Extremely Hard. The lesson 1 difficulty mean = 4.38, std. dev. = 1.245.



Lesson 1 Difficulty for the Teachers (i.e. preparation, delivery, etc.). The scale used for the difficulty of each lesson was a line across the page with three easily identifiable equidistant points for the teachers to mark a judgment. At the left extreme was 1 = Extremely Easy, in the middle 5 = Just Right, and at the right extreme 9 = Extremely Hard. The lesson 1 difficulty mean = 4.79, std. dev. = 1.769.

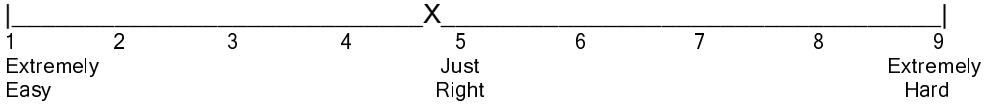


Table 28. General Questions on Lesson 2: *What's Wrong?* Teacher Results

	Strongly Disagree 1	Disagree 2	Disagree a Little 3	Agree a Little 4	Agree 5	Strongly Agree 6	Mean	St. Dev
1. The content was accurate and current.	0	0	0	4.3	52.2	43.5	5.39	.58
2. The reading level was appropriate for my students.	0	0	4.2	16.7	54.2	25.0	5.00	.78
3. The examples and explanations were appropriate for my students.	0	0	0	12.5	58.3	29.2	5.17	.64
4. The amount of prerequisite knowledge required to understand the lesson was acceptable.	0	0	0	12.5	70.8	16.7	5.04	.55
5. Students could understand the scientific content clearly.	0	0	4.2	16.7	62.5	16.7	4.92	.72
6. The lesson contained an appropriate amount of content.	0	0	0	18.2	59.1	22.7	5.05	.65
7. The lesson promoted thinking, inquiry, and study skills.	0	0	0	0	47.8	52.2	5.52	.51
8. The lesson was engaging (that is, it got students more interested in the science content).	0	0	0	17.4	39.1	43.5	5.26	.75
9. The lesson took an inquiry-oriented approach.	0	0	4.3	4.3	39.1	52.2	5.39	.78
10. The lesson could replace my existing materials.	0	4.8	0	19.0	47.6	28.6	4.95	.97

Table 29. Graphics Questions on Lesson 2: Teacher Results

	Strongly Disagree 1	Disagree 2	Disagree a Little 3	Agree a Little 4	Agree 5	Strongly Agree 6	Mean	St. Dev
1. The graphics were clear and meaningful.	0	0	20.8	4.2	58.3	16.7	4.71	.99
2. The graphics helped students understand the material.	0	0	12.5	16.7	45.8	25.0	4.83	.96
3. The graphics promoted student thinking, discussion, problem solving, and inquiry.	0	4.2	12.5	12.5	54.2	16.7	4.67	1.05
4. The graphics motivated students to read the text.	4.3	0	21.7	21.7	34.8	17.4	4.35	1.27
5. The graphics were engaging (that is, they got the students doing interesting things).	0	4.2	12.5	20.8	45.8	16.7	4.58	1.06

Table 30. Format of the Student Materials Questions on Lesson 2: Teacher Results

	Strongly Disagree 1	Disagree 2	Disagree a Little 3	Agree a Little 4	Agree 5	Strongly Agree 6	Mean	St. Dev
1. The layout was visually interesting and easy to read.	0	4.2	4.2	16.7	66.7	8.3	4.71	.86
2. The sizes and types of fonts were appropriate.	0	4.2	4.2	4.2	62.5	25.0	5.00	.93

Table 31. Organization of Student Materials Questions on Lesson 2: Teacher Results

	Strongly Disagree 1	Disagree 2	Disagree a Little 3	Agree a Little 4	Agree 5	Strongly Agree 6	Mean	St. Dev
1. Organization of the text promoted learning.	0	0	4.2	16.7	58.3	20.8	4.96	.75
2. The main concepts were presented logically.	0	0	0	16.7	62.5	20.8	5.04	.62
3. Content was presented at an appropriate pace.	0	0	0	21.7	52.2	26.1	5.04	.71

Table 32. Relevance of the Student Materials Questions on Lesson 2: Teacher Results

	Strongly Disagree 1	Disagree 2	Disagree a Little 3	Agree a Little 4	Agree 5	Strongly Agree 6	Mean	St. Dev
1. Content was related to real-life examples and/or students' lives.	0	0	4.2	4.2	37.5	54.2	5.42	.78

Table 33. Effectiveness of Lesson 2 in Achieving Learning Outcomes: Teacher Results

	Very Ineffective 1	Ineffective 2	Mod. Ineffective 3	Mod. Effective 4	Effective 5	Very Effective 6	Mean	Std. Dev.
1. Students should be able to explain that doctor's diagnose diseases based on a set of characteristic symptoms.	0	0	0	4.3	56.5	39.1	5.35	,57
2. Students should be able to define "disease".	0	0	0	17.4	34.8	47.8	5.30	.77
3. Students should recognize that diagnosing disease is an example of applying science processes.	0	0	4.3	34.8	43.5	17.4	4.74	.81
4. Students should be able to identify common symptoms of depression.	0	0	0	8.3	50.0	41.7	5.33	.64
5. Students should understand that changes in brain activity are associated with depression.	0	0	0	16.7	45.8	37.5	5.21	.72

Table 34. Website Questions on Lesson 2: Teacher Results

	Strongly Disagree 1	Disagree 2	Disagree a Little 3	Agree a Little 4	Agree 5	Strongly Agree 6	Mean	St. Dev
1. The website was clearly connected to the lesson.	0	0	11.1	5.6	11.1	72.2	5.44	1.04
2. The students were able to navigate easily in the website without confusion.	0	0	5.9	17.6	35.3	41.2	5.12	.93
3. The website made the lesson more understandable.	0	0	5.6	11.1	27.8	55.6	5.33	.91
4. The website made the lesson more interesting.	0	0	5.6	11.1	5.6	77.8	5.56	.92

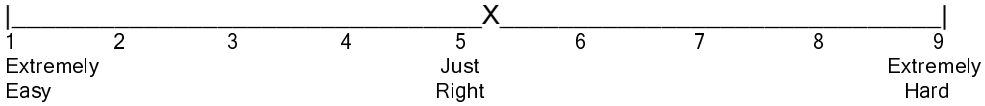
Table 35. Effectiveness of Activities in Lesson 2: Teacher Results

	Very Ineffective 1	Ineffective 2	Mod. Ineffective 3	Mod. Effective 4	Effective 5	Very Effective 6	Mean	Std. Dev.
1. Activity 2-1, *Analyzing the Cases.*	0	0	4.2	0	50.0	45.8	5.38	.71
2. Activity 2-2, *Is It a Disease?*	0	0	4.3	26.1	52.2	17.4	4.83	.78
3. Activity 2-3, *How is Science Done?*	0	0	23.8	57.1	9.5	9.5	4.05	.87
4. Activity 2-4, *Looking Inside the Brain.*	0	0	4.3	39.1	34.8	21.7	4.74	.86

Table 36. Teacher Background Materials for Lesson 2: Teacher Results

	Strongly Disagree 1	Disagree 2	Disagree a Little 3	Agree a Little 4	Agree 5	Strongly Agree 6	Mean	St. Dev
1. The teacher's background materials helped me better understand and support the lesson.	0	0	0	4.3	60.9	34.8	5.30	.56
2. The implementation materials helped me conduct the learning activities.	0	0	0	8.7	65.2	26.1	5.17	.58
3. The relationship between the NSES's content and lesson-specific concepts were clearly presented in the teacher background materials.	0	0	0	13.0	56.5	30.4	5.17	.65

Lesson 2 Difficulty for the Student as Rated by Teachers. The scale used for the difficulty of each lesson was a line across the page with three easily identifiable equidistant points for the teachers to mark a judgment. At the left extreme was 1 = Extremely Easy, in the middle 5 = Just Right, and at the right extreme 9 = Extremely Hard. The lesson 2 difficulty mean = 5.22, std. dev. = .951.



Lesson 2 Difficulty for the Teachers (i.e. preparation, delivery, etc.). The scale used for the difficulty of each lesson was a line across the page with three easily identifiable equidistant points for the teachers to mark a judgment. At the left extreme was 1 = Extremely Easy, in the middle 5 = Just Right, and at the right extreme 9 = Extremely Hard. The lesson 2 difficulty mean = 5.50, std. dev. = 1.319.

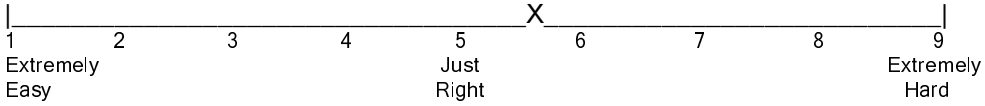


Table 37. General Questions on Lesson 3: *Mental Illness: Could It Happen to Me?* Teacher Results

	Strongly Disagree 1	Disagree 2	Disagree a Little 3	Agree a Little 4	Agree 5	Strongly Agree 6	Mean	St. Dev
1. The content was accurate and current.	0	0	4.2	8.3	45.8	41.7	5.25	.79
2. The reading level was appropriate for my students.	0	0	13.0	4.3	39.1	43.5	5.13	1.01
3. The examples and explanations were appropriate for my students.	4.2	0	4.2	12.5	33.3	45.8	5.08	1.21
4. The amount of prerequisite knowledge required to understand the lesson was acceptable.	0	0	4.2	12.5	50.0	33.3	5.13	.80
5. Students could understand the scientific content clearly.	0	4.2	8.3	12.5	45.8	29.2	4.88	1.08
6. The lesson contained an appropriate amount of content.	0	0	0	20.8	50.0	29.2	5.08	.72
7. The lesson promoted thinking, inquiry, and study skills.	0	0	0	16.7	29.2	54.2	5.38	.77
8. The lesson was engaging (that is, it got students more interested in the science content).	0	0	0	16.7	33.3	50.0	5.33	.76
9. The lesson took an inquiry-oriented approach.	0	0	0	16.7	58.3	25.0	5.08	.65
10. The lesson could replace my existing materials.	0	0	9.1	19.2	40.9	31.8	4.95	.95

Table 38. Graphics Questions on Lesson 3: Teacher Results

	Strongly Disagree 1	Disagree 2	Disagree a Little 3	Agree a Little 4	Agree 5	Strongly Agree 6	Mean	St. Dev
1. The graphics were clear and meaningful.	0	4.3	8.7	17.4	47.8	21.7	4.74	1.05
2. The graphics helped students understand the material.	0	4.3	13.0	13.0	43.5	26.1	4.74	1.14
3. The graphics promoted student thinking, discussion, problem solving, and inquiry.	0	4.3	4.3	17.4	47.8	26.1	4.87	1.01
4. The graphics motivated students to read the text.	0	9.1	4.5	27.3	40.9	18.2	4.55	1.14
5. The graphics were engaging (that is, they got the students doing interesting things).	0	4.3	4.3	26.1	34.8	30.4	4.83	1.07

Table 39. Format of the Student Materials Questions on Lesson 3: Teacher Results

	Strongly Disagree 1	Disagree 2	Disagree a Little 3	Agree a Little 4	Agree 5	Strongly Agree 6	Mean	St. Dev
1. The layout was visually interesting and easy to read.	0	4.2	4.2	12.5	54.2	25.0	4.92	.97
2. The sizes and types of fonts were appropriate.	0	0	4.2	8.3	50.0	37.5	5.21	.78

Table 40 Organization of Student Materials Questions on Lesson 3: Teacher Results

	Strongly Disagree 1	Disagree 2	Disagree a Little 3	Agree a Little 4	Agree 5	Strongly Agree 6	Mean	St. Dev
1. Organization of the text promoted learning.	0	0	12.5	8.3	54.2	25.0	4.92	.93
2. The main concepts were presented logically.	4.2	0	4.2	4.2	58.3	29.2	5.00	1.10
3. Content was presented at an appropriate pace.	0	0	8.3	4.2	62.5	25.0	5.04	.81

Table 41. Relevance of the Student Materials Questions on Lesson 3: Teacher Results

	Strongly Disagree 1	Disagree 2	Disagree a Little 3	Agree a Little 4	Agree 5	Strongly Agree 6	Mean	St. Dev
1. Content was related to real-life examples and/or students' lives.	0	0	8.3	4.2	25.0	62.5	5.42	.93

Table 42. Effectiveness of Lesson 3 in Achieving Learning Outcomes: Teacher Results

	Very Ineffective 1	Ineffective 2	Mod. Ineffective 3	Mod. Effective 4	Effective 5	Very Effective 6	Mean	Std. Dev.
1. Students should recognize that mental illness is something that could happen to anyone.	0	0	0	8.3	41.7	50.0	5.42	.65
2. Students should be able to identify factors that influence a person's risk for developing a mental illness.	0	0	0	12.5	29.2	58.3	5.46	.72
3. Students should be able to explain that some factors increase a person's risk for mental illness and other factors decrease a person's risk for mental illness.	0	0	8.3	20.8	20.8	50.0	5.13	1.04

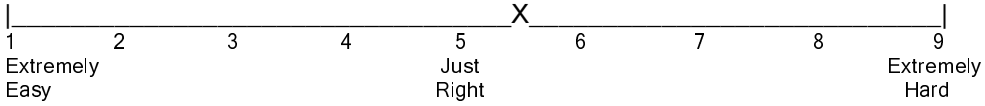
Table 43. Effectiveness of Activities in Lesson 3: Teacher Results

	Very Ineffective 1	Ineffective 2	Mod. Ineffective 3	Mod. Effective 4	Effective 5	Very Effective 6	Mean	Std. Dev.
1. Activity 3-1, *What Are the Risks?*	0	0	0	16.7	45.8	37.5	5.21	.72

Table 44. Teacher Background Materials for Lesson 3: Teacher Results

	Strongly Disagree 1	Disagree 2	Disagree a Little 3	Agree a Little 4	Agree 5	Strongly Agree 6	Mean	St. Dev
1. The teacher's background materials helped me better understand and support the lesson.	0	0	0	8.7	47.8	43.5	5.35	.65
2. The implementation materials helped me conduct the learning activities.	0	0	0	4.3	60.9	34.8	5.30	.56
3. The relationship between the NSES's content and lesson-specific concepts were clearly presented in the teacher background materials.	0	0	4.3	8.7	60.9	26.1	5.09	.73

Lesson 3 Difficulty for the Student as Rated by Teachers. The scale used for the difficulty of each lesson was a line across the page with three easily identifiable equidistant points for the teachers to mark a judgment. At the left extreme was 1 = Extremely Easy, in the middle 5 = Just Right, and at the right extreme 9 = Extremely Hard. The lesson 3 difficulty mean = 5.42, std. dev. = 1.213.



Lesson 3 Difficulty for the Teachers (i.e. preparation, delivery, etc.). The scale used for the difficulty of each lesson was a line across the page with three easily identifiable equidistant points for the teachers to mark a judgment. At the left extreme was 1 = Extremely Easy, in the middle 5 = Just Right, and at the right extreme 9 = Extremely Hard. The lesson 3 difficulty mean = 4.88, std. dev. = 1.191.

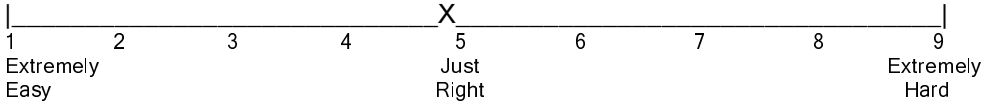


Table 45. General Questions on Lesson 4: *Treatment Works!* Teacher Results

	Strongly Disagree 1	Disagree 2	Disagree a Little 3	Agree a Little 4	Agree 5	Strongly Agree 6	Mean	St. Dev
1. The content was accurate and current.	0	0	4.2	0	62.5	33.3	5.25	.68
2. The reading level was appropriate for my students.	0	0	4.3	8.7	60.9	26.1	5.09	.73
3. The examples and explanations were appropriate for my students.	0	0	4.2	12.5	58.3	25.0	5.04	.75
4. The amount of prerequisite knowledge required to understand the lesson was acceptable.	0	4.2	4.2	0	66.7	25.0	5.04	.91
5. Students could understand the scientific content clearly.	0	8.3	4.2	16.7	54.2	16.7	4.67	1.09
6. The lesson contained an appropriate amount of content.	0	0	8.3	16.7	58.3	16.7	4.83	.82
7. The lesson promoted thinking, inquiry, and study skills.	0	0	8.3	20.8	45.8	25.0	4.88	.90
8. The lesson was engaging (that is, it got students more interested in the science content).	4.2	8.3	16.7	29.2	20.8	20.8	4.17	1.40
9. The lesson took an inquiry-oriented approach.	0	4.2	25.0	25.0	25.0	20.8	4.33	1.20
10. The lesson could replace my existing materials.	0	4.5	18.2	31.8	22.7	22.7	4.41	1.18

Table 46. Graphics Questions on Lesson 4: Teacher Results

	Strongly Disagree 1	Disagree 2	Disagree a Little 3	Agree a Little 4	Agree 5	Strongly Agree 6	Mean	St. Dev
1. The graphics were clear and meaningful.	12.5	4.2	8.3	33.3	33.3	8.3	3.96	1.46
2. The graphics helped students understand the material.	4.2	8.3	12.5	33.3	25.0	16.7	4.17	1,34
3. The graphics promoted student thinking, discussion, problem solving, and inquiry.	8.3	4.2	20.8	29.2	25.0	12.5	3.96	1.40
4. The graphics motivated students to read the text.	9.1	4.5	45.5	4.5	31.8	4.5	3.59	1.37
5. The graphics were engaging (that is, they got the students doing interesting things).	8.7	8.7	26.1	17.4	30.4	8.7	3.78	1.45

Table 47. Format of the Student Materials Questions on Lesson 4: Teacher Results

	Strongly Disagree 1	Disagree 2	Disagree a Little 3	Agree a Little 4	Agree 5	Strongly Agree 6	Mean	St. Dev
1. The layout was visually interesting and easy to read.	4.2	0	16.7	16.7	20.8	50.0	4.38	1.14
2. The sizes and types of fonts were appropriate.	0	4.2	0	12.5	54.2	29.2	5.04	.91

Table 48. Organization of Student Materials Questions on Lesson 4: Teacher Results

	Strongly Disagree 1	Disagree 2	Disagree a Little 3	Agree a Little 4	Agree 5	Strongly Agree 6	Mean	St. Dev
1. Organization of the text promoted learning.	0	8.3	8.3	16.7	54.2	12.5	4.54	1.10
2. The main concepts were presented logically.	0	0	0	25.0	54.2	20.8	4.96	.69
3. Content was presented at an appropriate pace.	0	0	8.3	12.5	62.5	16.7	4.88	.80

Table 49. Relevance of the Student Materials Questions on Lesson 4: Teacher Results

	Strongly Disagree 1	Disagree 2	Disagree a Little 3	Agree a Little 4	Agree 5	Strongly Agree 6	Mean	St. Dev
1. Content was related to real-life examples and/or students' lives.	0	4.2	0	20.8	29.2	45.8	5.13	1.04

Table 50. Effectiveness of Lesson 4 in Achieving Learning Outcomes: Teacher Results

	Very Ineffective 1	Ineffective 2	Mod. Ineffective 3	Mod. Effective 4	Effective 5	Very Effective 6	Mean	Std. Dev.
1. Students should be able to explain that mental illnesses can be treated effectively using drugs and psychotherapy.	0	0	8.3	12.5	37.5	41.7	5.13	.95
2. Students should understand that treatment for mental illnesses allow individuals to function effectively in society.	0	0	0	16.7	66.7	16.7	5.00	.59

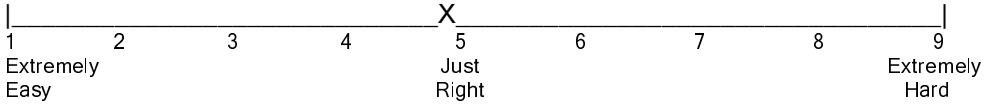
Table 51. Effectiveness of Activities in Lesson 4: Teacher Results

	Very Ineffective 1	Ineffective 2	Mod. Ineffective 3	Mod. Effective 4	Effective 5	Very Effective 6	Mean	Std. Dev.
1. Activity 4-1, *Will It Get Better?*	0	4.2	8.3	20.8	45.8	20.8	4.71	1.04

Table 52. Teacher Background Materials for Lesson 4: Teacher Results

	Strongly Disagree 1	Disagree 2	Disagree a Little 3	Agree a Little 4	Agree 5	Strongly Agree 6	Mean	St. Dev
1. The teacher's background materials helped me better understand and support the lesson.	0	0	4.2	12.5	58.3	25.0	5.04	.75
2. The implementation materials helped me conduct the learning activities.	0	0	4.3	4.3	69.6	21.7	5.09	.67
3. The relationship between the NSES's content and lesson-specific concepts were clearly presented in the teacher background materials.	0	4.2	4.2	8.3	62.5	20.8	4.92	.93

Lesson 4 Difficulty for the Student as Rated by Teachers. The scale used for the difficulty of each lesson was a line across the page with three easily identifiable equidistant points for the teachers to mark a judgment. At the left extreme was 1 = Extremely Easy, in the middle 5 = Just Right, and at the right extreme 9 = Extremely Hard. The lesson 4 difficulty mean = 4.83, std. dev. = 1.642.



Lesson 4 Difficulty for the Teachers (i.e. preparation, delivery, etc.). The scale used for the difficulty of each lesson was a line across the page with three easily identifiable equidistant points for the teachers to mark a judgment. At the left extreme was 1 = Extremely Easy, in the middle 5 = Just Right, and at the right extreme 9 = Extremely Hard. The lesson 4 difficulty mean = 4.50, std. dev. = 1.956.

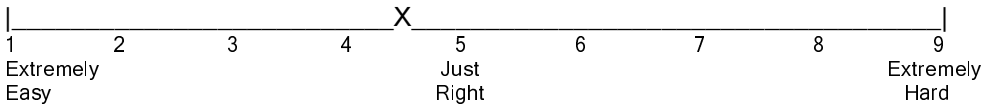


Table 53. General Questions on Lesson 5: *You're the Expert Now* Teacher Results

	Strongly Disagree 1	Disagree 2	Disagree a Little 3	Agree a Little 4	Agree 5	Strongly Agree 6	Mean	St. Dev
1. The content was accurate and current.	0	0	4.5	4.5	50.0	40.9	5.27	.77
2. The reading level was appropriate for my students.	0	0	4.8	9.5	47.6	38.1	5.19	.81
3. The examples and explanations were appropriate for my students.	0	0	13.6	9.1	40.9	36.4	5.00	1.02
4. The amount of prerequisite knowledge required to understand the lesson was acceptable.	0	0	13.6	4.5	40.9	40.9	5.09	1.02
5. Students could understand the scientific content clearly.	0	4.8	0	19.0	38.1	38.1	5.05	1.02
6. The lesson contained an appropriate amount of content.	4.5	0	0	18.2	45.5	31.8	4.95	1.13
7. The lesson promoted thinking, inquiry, and study skills.	0	4.3	0	4.3	43.5	47.8	5.30	.93
8. The lesson was engaging (that is, it got students more interested in the science content),	0	0	0	13.0	34.8	52.2	5.39	.72
9. The lesson took an inquiry-oriented approach.	0	0	8.7	17.4	21.7	52.2	5.17	1.03
10. The lesson could replace my existing materials.	0	4.8	0	19.0	47.6	28.6	4.95	.97

Table 54. Graphics Questions on Lesson 5: Teacher Results

	Strongly Disagree 1	Disagree 2	Disagree a Little 3	Agree a Little 4	Agree 5	Strongly Agree 6	Mean	St. Dev
1. The graphics were clear and meaningful.	0	0	4.5	18.2	45.5	31.8	5.05	.84
2. The graphics helped students understand the material.	0	0	0	36.4	31.8	31.8	4.95	.84
3. The graphics promoted student thinking, discussion, problem solving, and inquiry.	0	0	4.5	27.3	27.3	40.9	5.05	.95
4. The graphics motivated students to read the text.	0	0	4.5	36.4	27.3	31.8	4.86	.94
5. The graphics were engaging (that is, they got the students doing interesting things).	0	0	4.5	27.3	31.8	36.4	5.00	.93

Table 55. Format of the Student Materials Questions on Lesson 5: Teacher Results

	Strongly Disagree 1	Disagree 2	Disagree a Little 3	Agree a Little 4	Agree 5	Strongly Agree 6	Mean	St. Dev
1. The layout was visually interesting and easy to read.	0	0	13.6	22.7	27.3	36.4	4.86	1.08
2. The sizes and types of fonts were appropriate.	0	0	9.1	9.1	40.9	40.9	5.14	.94

Table 56. Organization of Student Materials Questions on Lesson 5: Teacher Results

	Strongly Disagree 1	Disagree 2	Disagree a Little 3	Agree a Little 4	Agree 5	Strongly Agree 6	Mean	St. Dev
1. Organization of the text promoted learning.	0	4.5	4.5	13.6	50.0	27.3	4.91	1.02
2. The main concepts were presented logically.	0	4.5	0	13.6	54.5	27.3	5.00	.93
3. Content was presented at an appropriate pace.	0	4.5	0	9.1	50.0	36.4	5.14	.94

Table 57. Relevance of the Student Materials Questions on Lesson 5: Teacher Results

	Strongly Disagree 1	Disagree 2	Disagree a Little 3	Agree a Little 4	Agree 5	Strongly Agree 6	Mean	St. Dev
1. Content was related to real-life examples and/or students' lives.	4.3	0	0	13.0	39.1	43.5	5.13	1.14

Table 58. Effectiveness of Lesson 5 in Achieving Learning Outcomes: Teacher Results

	Very Ineffective 1	Ineffective 2	Mod. Ineffective 3	Mod. Effective 4	Effective 5	Very Effective 6	Mean	Std. Dev.
1. Students should be able to synthesize what they have learned about mental illness from the previous lessons.	0	4.3	4.3	4.3	43.5	43.5	5.17	1.03
2. Students should be able to communicate their new understanding to others.	0	8.7	0	8.3	43.5	39.1	5.04	1.15
3. Students should be able to evaluate information about mental illness that other students have compiled for accuracy and relevance.	0	4.3	4.3	8.7	39.1	43.5	5.13	1.06

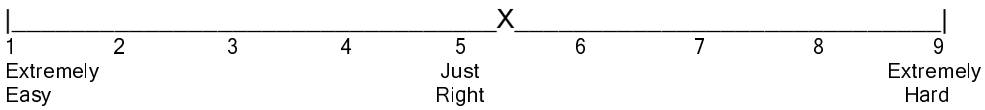
Table 59. Effectiveness of Activities in Lesson 5: Teacher Results

	Very Ineffective 1	Ineffective 2	Mod. Ineffective 3	Mod. Effective 4	Effective 5	Very Effective 6	Mean	Std. Dev.
1. Activity 5-1, *Evaluating Brochures.*	4.3	0	4.3	17.4	26.1	47.8	5.04	1.26
2. Activity 5-2, *What Do You Know?*	0	4.3	4.3	17.4	34.8	39.1	5.00	1.09

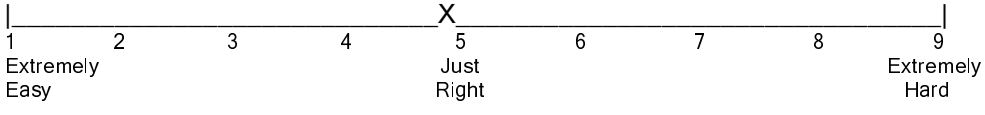
Table 60. Teacher Background Materials for Lesson 5: Teacher Results

	Strongly Disagree 1	Disagree 2	Disagree a Little 3	Agree a Little 4	Agree 5	Strongly Agree 6	Mean	St. Dev
1. The teacher's background materials helped me better understand and support the lesson.	0	0	0	8.7	65.2	26.1	5.17	.58
2. The implementation materials helped me conduct the learning activities.	0	0	0	4.3	60.9	34.8	5.30	.56
3. The relationship between the NSES's content and lesson-specific concepts were clearly presented in the teacher background materials.	0	0	4.3	0	69.6	26.1	5.17	.65

Lesson 5 Difficulty for the Student as Rated by Teachers. The scale used for the difficulty of each lesson was a line across the page with three easily identifiable equidistant points for the teachers to mark a judgment. At the left extreme was 1 = Extremely Easy, in the middle 5 = Just Right, and at the right extreme 9 = Extremely Hard. The lesson 5 difficulty mean = 5.26, std. dev. = 1.096.



Lesson 5 Difficulty for the Teachers (i.e. preparation, delivery, etc.). The scale used for the difficulty of each lesson was a line across the page with three easily identifiable equidistant points for the teachers to mark a judgment. At the left extreme was 1 = Extremely Easy, in the middle 5 = Just Right, and at the right extreme 9 = Extremely Hard. The lesson 5 difficulty mean = 4.96, std. dev. = 1.224.



Overall Module Results from Teachers.

Most and Least Valuable Aspects of the Module and Suggestions for Improvements. The teachers were asked to respond to an open-ended question on the most and least valuable aspects of the module and suggestions for improvements in the module. These comments, in their totality, are included in Appendix H.

Table 61. Comparison of Lesson Levels of Difficulty for the Students as Rated by Teachers

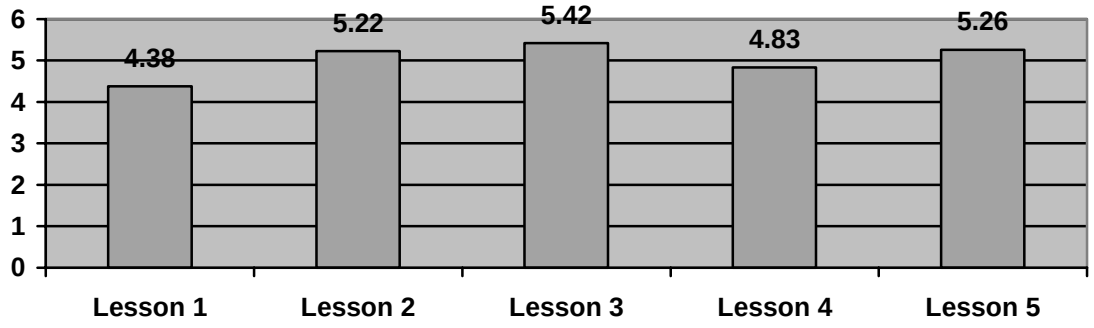


Table 62. Comparison of Lesson Levels of Difficulty for Teachers

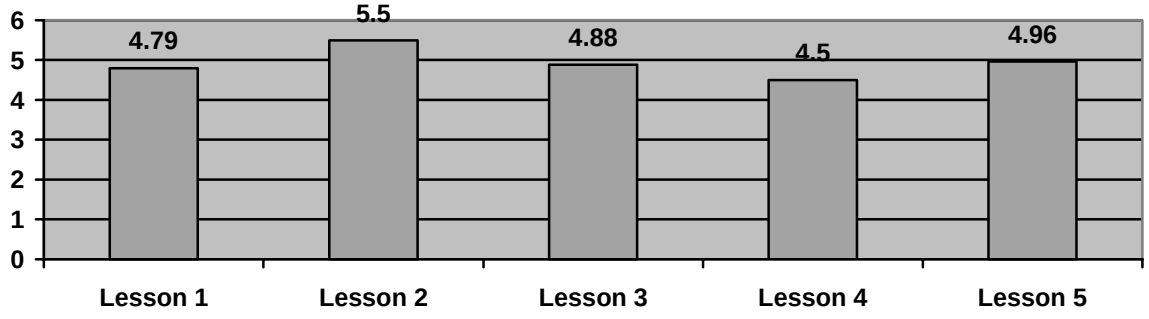


Table 63 depicts the number of class periods required to cover the materials. Discussions of the utility of replacement or supplementary modules, the notion of difficulty of the modules and individual lessons comes up frequently. Table 64 is a comparison of the levels of difficulty for each lesson as well as the overall module. The scale used for all these estimations by the students and teachers was line across the page with three easily identifiable equidistant points to mark a judgment. At the left extreme was 1 = Extremely Easy, in the middle 5 = Just Right, and at the right extreme 9 = Extremely Hard. The averages are all in the middle range, close to "Just Right", therefore we must conclude that for this module the developers hit their target. The estimated difficulty was slightly higher in student estimations compared to teacher estimates in most cases.

Table 63. Class Periods Spent On Each Lesson

	Average Number of Class Periods Spent on Lesson	Rank with other lessons (1=highest, 5=lowest)
Lesson 1: The Brain: Control Center	2.58	4
Lesson 2: What's Wrong?	3.42	1
Lesson 3: Mental Illness: Could It Happen to Me?	2.61	3
Lesson 4: Treatment Works!	2.09	5
Lesson 5: You're the Expert Now	3.09	2
Total of Averages for all 5 lessons	13.79	

Table 64. Comparison of Means of Teachers and Students on Level of Difficulty (Scale = 1 - 9)

	Teacher Difficulty (Prep, Teaching, etc.)	Teachers' Perception of Difficulty for Students	Students Self Reporting of Lesson Difficulty
Lesson 1: The Brain: Control Center	4.79	4.38	4.22
Lesson 2: What's Wrong?	5.50	5.22	4.35
Lesson 3: Mental Illness: Could It Happen to Me?	4.88	5.42	4.18
Lesson 4: Treatment Works!	4.50	4.83	4.18
Lesson 5: You're the Expert Now	4.96	5.26	4.35

Activities Evaluation Summary : Teacher data.

The teachers evaluated each activity in addition to the lessons themselves. They estimated the effectiveness of the activity. Table 65 is a summary of the results of all the activities for all five lessons and rankings of how they compared to each other. In addtion, there are many comments by the teachers and the students on the activities in Appendices G and H.

Table 65. Rankings of Activities in the lessons.

	Mean (1=Very Ineffective, 6=Very Effective)	Rank with other Activities (1=high, 10=low)
Lesson 1		
1. Activity 1-1, *Email from a Friend & Find the Mistakes.*	5.17	3 (tie)
2. Activity 1-2, *What Do You Know?*	4.91	6
3. *Activity 1-3*, What's Happening in the Brain?	5.17	3 (tie)
Lesson 2		
1. Activity 2-1, *Analyzing the Cases.*	5.38	1
2. Activity 2-2, *Is It a Disease?*	4.83	7
3. Activity 2-3, *How is Science Done?*	4.05	10
4. Activity 2-4, *Looking Inside the Brain.*	4.74	8
Lesson 3		
1. Activity 3-1, *What Are the Risks?*	5.21	2
Lesson 4		
1. Activity 4-1, *Will It Get Better?*	4.71	9
Lesson 5		
1. Activity 5-1, *Evaluating Brochures.*	5.04	4
2. Activity 5-2, *What Do You Know?*	5.00	5

D. Evaluation Snapshots of the Lessons.

It is useful for the developers who work on specific lessons to have a picture of the impressions of the teachers and students who used their materials. Tables 66-70 contain information extracted from other tables and put here to provide a "snapshot" of each lesson. In addition, the rankings for the lessons are provided merely to give an idea of how they compare to other lessons. The rankings are meant to be useful only for gross comparisons. Sometimes the difference between ranks is great, sometimes the difference is quite small. Typical comments by teachers and students are included as well as an "Assessment". The assessment statements are meant to provide a starting point for the developers as they go into the next phase of the development process.

Table 66. An Evaluation Snapshot of Lesson 1: The Brain: Control Center

	STUDENT RESULTS	STUDENT RESULTS	TEACHER RESULTS	TEACHER RESULTS
	Average Score (1=Strongly Disagree, 6=Strongly Agree)	Rank with other Lessons (1=highest, 5=lowest)	Average Score (1=Strongly Disagree, 6=Strongly Agree)	Rank with other Lessons (1=highest, 5=lowest)
The lesson was interesting. (The material was engaging.)	4.57	4	5.04	4
I could read the material easily. (Reading level was appropriate.)	4.78	4	5.00	4
I (students) could understand the examples and explanations.	4.76	4	5.00	4
I (students) could understand the scientific information easily.	4.48	4	5.04	2
The graphics were clear and meaningful.	4.51	2	5.21	1
The graphics helped me (students) understand the material covered.	4.57	1	5.33	1
The graphics promoted thinking, discussion, problem solving, and inquiry.	4.22	2	5.21	1
The graphics motivated me (students) to read the text.	3.87	5	4.32	4
The graphics were engaging.	4.46	3	5.08	1
The content was accurate and current.	N/A	N/A	5.35	2
The text could replace my existing materials.	N/A	N/A	4.57	2
The website was clearly connected to the lesson.	4.71	2	5.35	2
I (student) was able to easily navigate in the website without confusion	4.59	2	5.19	1
The website made the lesson more understandable.	4.67	2	5.21	2
The website made the lesson more interesting.	4.83	1	5.37	1
Lesson Difficulty for Students	4.22	2	4.38	5
Lesson Difficulty for Teachers to Teach	N/A	N/A	4.79	4
TYPICAL LESSON 1 COMMENTS	It was fun. Just right in difficulty. The zinger was great. Make the scary email scarier. Needs more PET scans. Boring. Cool lesson. Scool sucks. No sound card		The zinger was very effective. The vocabulary was difficult for an ESL class. PET scans were excellent. It was difficult getting set up for the email from a friend activity. Good discussion activity that made them see the aspect of hopelessness that some people with mental illness experience.	
ASSESSMENT	Lesson 1 rated in the mid-range to lower on most evaluation dimensions when compared to other lessons. The graphics were highly rated by both teachers and students. The web work on this lesson was highly evaluated. Teachers considered Lesson 1 the least difficult lesson but one that was very effective in grabbing the students' attention and generating discussion. Student comments such as "boring" are found throughout the survey and probably do not reflect on this lesson. A persistent comment from teachers and students was that the email wasn't really scary...especially to kids used to the mayhem and violence in video games. Hopelessness is of interest to this age group as they seek to establish their own identities in a difficult and challenging world. One of the most interesting comments made a couple of times was to put in the materials somewhere "800" numbers for information of these diseases as well as a national hotline number on suicide.			

Table 67. An Evaluation Snapshot of Lesson 2: What's Wrong?

	STUDENT RESULTS	STUDENT RESULTS	TEACHER RESULTS	TEACHER RESULTS
	Average Score (1=Strongly Disagree, 6=Strongly Agree)	Rank with other Lessons (1=highest, 5=lowest)	Average Score (1=Strongly Disagree, 6=Strongly Agree)	Rank with other Lessons (1=highest, 5=lowest)
The lesson was interesting. (The material was engaging.)	4.58	3	5.26	3
I could read the material easily. (Reading level was appropriate.)	4.82	3	5.00	4
I (students) could understand the examples and explanations.	4.77	3	5.17	1
I (students) could understand the scientific information easily.	4.45	5	4.92	3
The graphics were clear and meaningful.	4.48	3	4.71	4
The graphics helped me (students) understand the material covered.	4.56	2	4.83	3
The graphics promoted thinking, discussion, problem solving, and inquiry.	4.21	3	4.67	4
The graphics motivated me (students) to read the text.	4.14	2	4.35	3
The graphics were engaging.	4.48	2	4.58	4
The content was accurate and current.	N/A	N/A	5.39	1
The text could replace my existing materials.	N/A	N/A	4.95	1
The website was clearly connected to the lesson.	4.74	1	5.44	1
I (student) was able to easily navigate in the website without confusion	4.65	1	5.12	2
The website made the lesson more understandable.	4.74	1	5.33	1
The website made the lesson more interesting.	4.74	2	5.36	2
Lesson Difficulty for Students	4.35	1	5.22	3
Lesson Difficulty for Teachers to Teach	N/A	N/A	5.50	1
TYPICAL LESSON 2 COMMENTS	Medical charts were great but some words difficult. The lesson was OK...make it more fun. Website wasn't working. I liked evaluating my patient...hard but I liked it. Fun. Boring. Need to update computer cartoons. Good lesson...it was cool Need more graphics and activities.		Being interactive helped the students internalize the lesson. The kids loved using the computer. Most of the unit required passive involvement...middle school students need active involvement. They enjoyed role playing interns. I didn't see a single student who was not involved in the group discussion. Sound problems in computer lab.	
ASSESSMENT	Students found this the most difficult lesson (a tie with lesson 5) and teachers found it the most difficult to teach but all were still within the "just right" range. Teachers thought this lesson along with lessons 3 and 5 were the leading candidates to replace their existing materials. The website activity for lesson 2 was rated a little higher than lesson 1. It was a hit. The medical charts and playing intern was frequently commented on as being fun...rather like playing teacher in Lesson 5. Teachers encouraged having more activity and active involvement because of the high energy levels of middle school students.			

Table 68. An Evaluation Snapshot of Lesson 3: Mental Illness: Could It Happen to Me?

	STUDENT RESULTS	STUDENT RESULTS	TEACHER RESULTS	TEACHER RESULTS
	Average Score (1=Strongly Disagree, 6=Strongly Agree)	Rank with other Lessons (1=highest, 5=lowest)	Average Score (1=Strongly Disagree, 6=Strongly Agree)	Rank with other Lessons (1=highest, 5=lowest)
The lesson was interesting. (The material was engaging.)	4.65	2	5.33	2
I could read the material easily. (Reading level was appropriate.)	4.87	2	5.13	2
I (students) could understand the examples and explanations.	4.81	2	5.08	2
I (students) could understand the scientific information easily.	4.69	2	4.88	4
The graphics were clear and meaningful.	4.42	4	4.74	3
The graphics helped me (students) understand the material covered.	4.47	4	4.74	4
The graphics promoted thinking, discussion, problem solving, and inquiry.	4.18	4	4.87	3
The graphics motivated me (students) to read the text.	4.12	3	4.55	2
The graphics were engaging.	4.44	4	4.83	3
The content was accurate and current.	N/A	N/A	5.25	4
The text could replace my existing materials.	N/A	N/A	4.95	1
Website Questions	N/A	N/A	N/A	N/A
Lesson Difficulty for Students	4.18	3	5.42	1
Lesson Difficulty for Teachers to Teach	N/A	N/A	4.88	3
TYPICAL LESSON 3 COMMENTS	Lesson was too easy. It was too hard. It was cool learning about ADHD & Schizophrenia The risk meter was hard to understand. The lesson was a little confusing but fun. The die thing was unnecessary. It was fun. Cool to learn but freaked me out because I was scared I had a disease.		This lesson became personal for some students. They wanted more information on bipolar. One of the better lessons because of hands-on. I had them name the person they had made by throwing the die and a fellow English teacher had them write a narrative about them. It worked well. Reading level difficult for some students.	
ASSESSMENT	Teachers thought this was the most difficult lesson for students but students rated it 3rd in difficulty. Along with lessons 2 and 5 this one was a leading candidate to replace their existing materials. Most of the ratings in the evaluation dimensions were in the mid-range. The web activities on Lessons 1 and 2 seems to have them begging for more. They like online work and missed it in Lessons 3-5. It was clear in the student and teacher comments that by this time and in particular in this lesson some of the content started to hit home in a personal way with some students. Consider clarifying the risk meter...that is probably the source of confusion on some of the comments. . One of the most interesting comments made a couple of times was to put in the materials somewhere "800" numbers for information of these diseases as well as a national hotline number on suicide. This module may be the entre for opening discussions on these topics with students who may be troubled or know students who are. It may be appropriate to point them in the right direction or give the teacher information or tools to deal with students who reveal such concerns or problems.			

Table 69. An Evaluation Snapshot of Lesson 4: Treatment Works!

	STUDENT RESULTS	STUDENT RESULTS	TEACHER RESULTS	TEACHER RESULTS
	Average Score (1=Strongly Disagree, 6=Strongly Agree)	Rank with other Lessons (1=highest, 5=lowest)	Average Score (1=Strongly Disagree, 6=Strongly Agree)	Rank with other Lessons (1=highest, 5=lowest)
The lesson was interesting. (The material was engaging.)	4.37	5	4.17	5
I could read the material easily. (Reading level was appropriate.)	4.76	5	5.09	3
I (students) could understand the examples and explanations.	4.72	5	5.04	3
I (students) could understand the scientific information easily.	4.67	3	4.67	5
The graphics were clear and meaningful.	4.42	4	3.96	5
The graphics helped me (students) understand the material covered.	4.45	5	4.17	5
The graphics promoted thinking, discussion, problem solving, and inquiry.	4.13	5	3.96	5
The graphics motivated me (students) to read the text.	4.01	4	3.59	5
The graphics were engaging.	4.40	5	3.78	5
The content was accurate and current.	N/A	N/A	5.25	4
The text could replace my existing materials.	N/A	N/A	4.41	3
Website Questions	N/A	N/A	N/A	N/A
Lesson Difficulty for Students	4.18	3	4.83	4
Lesson Difficulty for Teachers to Teach	N/A	N/A	4.50	5
TYPICAL LESSON 4 COMMENTS	It was too easy and boring. The lesson taught a lot and I liked learning about it. Too much reading. It was fun. I learned that people with ADHD, depression, and schizophrenia can get better. It was cool to learn about mental illness. Too many papers and reading. Need more online stuff. Treatment works.		Overkill from Lesson 3. Students seemed bored by this lesson and the PET scans. Great discussion on PET scans .Reading the stories in class did not allow them to elaborate on their learning. Students wanted more information and greater detail. It was important that they learned about treatment for these diseases. Difficult for 12 yr olds to focus on this content.	
ASSESSMENT	This lesson scored from mid-range to the lowest when compared to other lessons. It was the least difficult for teachers to teach but was also rated lower on most dimensions compared to other lessons. Students showed much the same pattern of mid-range to lowest scores. This lesson is probably the leading candidate for improvement based on the ratings. Students and teachers complained about the amount of reading but at the same time teachers wanted more information for students on the different diseases....perhaps websites or "800" numbers would help here also. The continuing comment on wanting more "online work" appears. The teachers commented on the boring quality of the lesson this time...not just the students. Very mixed results on the PET scans. This lesson could use some "jazzing up" of some type and a little more "hyped up" activity. That "Treatment works" is probably one of the most important lessons in this module and one they should walk away from the module remembering with clarity.			

Table 70. An Evaluation Snapshot of Lesson 5: You're the Expert Now

	STUDENT RESULTS	STUDENT RESULTS	TEACHER RESULTS	TEACHER RESULTS
	Average Score (1=Strongly Disagree, 6=Strongly Agree)	Rank with other Lessons (1=highest, 5=lowest)	Average Score (1=Strongly Disagree, 6=Strongly Agree)	Rank with other Lessons (1=highest, 5=lowest)
The lesson was interesting. (The material was engaging.)	4.69	1	5.39	1
I could read the material easily. (Reading level was appropriate.)	4.88	1	5.19	1
I (students) could understand the examples and explanations.	4.83	1	5.00	4
I (students) could understand the scientific information easily.	4.83	1	5.05	1
The graphics were clear and meaningful.	4.55	1	5.05	2
The graphics helped me (students) understand the material covered.	4.55	3	4.95	2
The graphics promoted thinking, discussion, problem solving, and inquiry.	4.23	1	5.05	2
The graphics motivated me (students) to read the text.	4.21	1	4.86	1
The graphics were engaging.	4.56	1	5.00	2
The content was accurate and current.	N/A	N/A	5.27	3
The text could replace my existing materials.	N/A	N/A	4.95	1
Website Questions	N/A	N/A	N/A	N/A
Lesson Difficulty for Students	4.35	1	5.26	2
Lesson Difficulty for Teachers to Teach	N/A	N/A	4.96	2
TYPICAL LESSON 5 COMMENTS	It was easy because we didn't have to write a lot. It was fun doing the brochures. It was fun. I liked the pictures we put in. The whole lesson was easy. Rubric grading was fun. Lesson 5 was just right in difficulty. Learning about schizophrenia was very interesting. It was a good interactive lesson. I had a lot of fun on this lesson.		Students love to play teacher and evaluate others. VERY effective. Incredibly effective. They really liked the brochures. Would have liked a "key" to the survey. I was pressed for time by the time we got to this lesson. This is a great assessment. There are still misconceptions but this module was a great starting point. It was fun!	
ASSESSMENT	Students rated this lesson most difficult but still below (that is easier) than the ideal score of 5. They rated it highest on most of the evaluation dimensions. Teachers also had comparatively high ratings for this lesson. Along with lessons 2 and 3 this lesson was rated highest as a candidate to replace existing materials. Taking all the dimensions into consideration this is the highest rated lesson. Both student and teacher comments suggest that this was the most successful lesson...very highly rated. The kids loved doing the brochures and grading them...essentially playing teacher. That it was perceived as easy is probably not important. The goal was to provide an activity that lets them know that they know something now. The lesson gave them information and activity to remember the rest of the lessons. Fine tune this lesson if you need to but it was definitely right on target!			

E. Results of the Pretest and Posttest Evaluation

The evaluation consists primarily of examination of the differences between the student's Pretest and Posttest scores on a "Student Knowledge Survey". The answer categories were True, False, or Not Sure. Appendices E and F contain copies of these surveys. The students took the first Knowledge survey (the Pretest) before exposure to the materials and the Posttest after using the materials. All students answered questions 1 – 13. Additionally, analysis of the "Not Sure" responses was conducted as well as the teacher's estimates of the success in achieving learning outcomes.

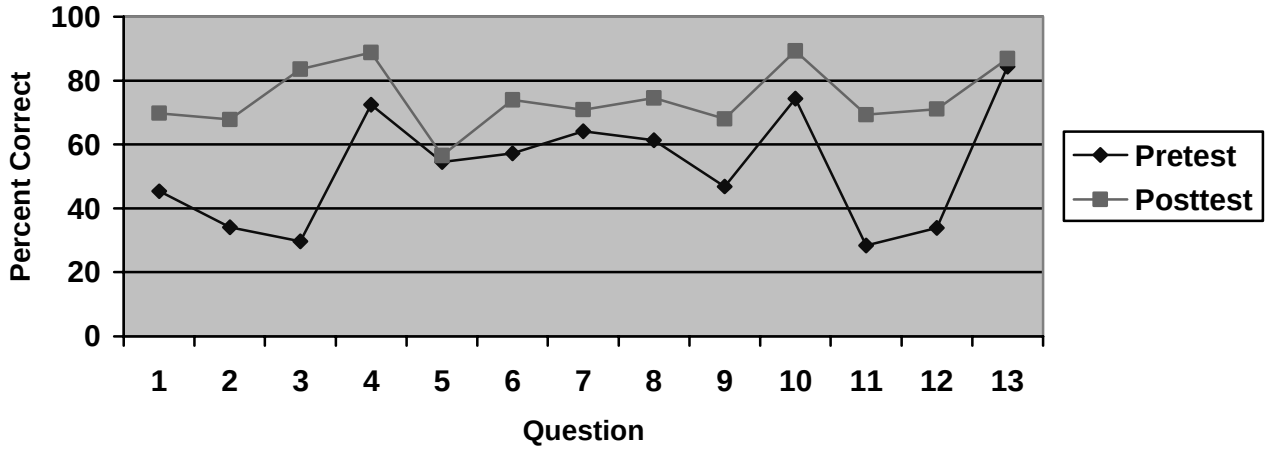
T-Tests. The students' answers were scored with answer keys which yielded the number of correct items. The Not Sure responses were scored as incorrect in the initial analyses. The mean number of correct responses on the Pretest = 6.88 (out of 13, Std. Dev. = 2.29). The mean number of correct responses on the Posttest = 9.84 (out of 13, Std. Dev. = 2.36). The t-test for Pretest and Posttest scores was 44.575, df=1249, p <.01 (two-tailed).

Percent Correct. Table 71 shows the percent correct on the pretest and posttest as well as the percent of "not sure" responses.

Table 71. Pretest & Posttest Questions with Percent Correct & "Not Sure" Responses.

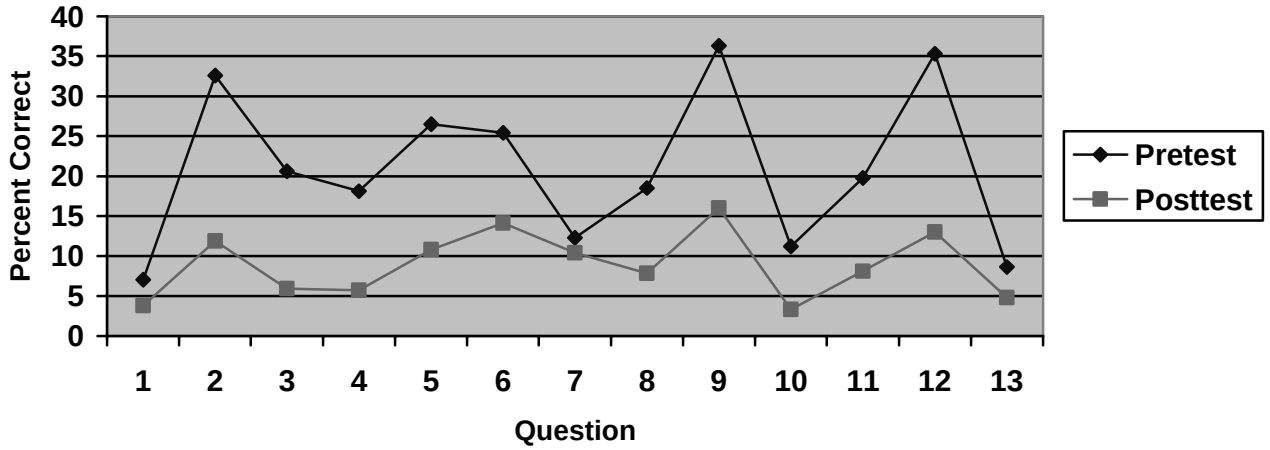
	Percent Correct PRETEST (SKS1)	Percent Correct POSTTEST (SKS2)	Percent "Not Sure" Responses on PRETEST	Percent "Not Sure" RESPONSES on POSTTEST
1. Depression is the same thing as being sad. (F)	45.4	69.8	7.0	3.8
2. Mental illness is like other diseases because a person who has it has symptoms that doctors can use to diagnose it. (T)	34.1	67.8	32.6	11.9
3. Individuals who have a family member with a mental illness are more likely to have a mental illness themselves. (T)	29.7	83.5	20.6	5.9
4. The brain of a healthy person works the same way as the brain of a mentally ill person. (F)	72.5	88.7	18.1	5.7
5. A person who does not get treatment for depression may feel better after awhile, but there may be some long-lasting effects. (T)	54.5	56.5	26.5	10.8
6. How bad a person's mental illness is depends on many things including his or her genes and family environment. (T)	57.2	74.0	25.4	14.1
7. A person uses his or her brain to learn, but the heart controls a person's feelings. (F)	64.1	70.9	12.3	10.4
8. Most people with mental illness can do normal things like go to school or work at a job. (T)	61.3	74.6	18.5	7.8
9. Treating mental illness can change the way the brain works. (T)	46.9	68.0	36.3	16.0
10. People with depression don't need to see a doctor--they just get over it. (F)	74.4	89.2	11.2	3.3
11. Depression is a disease. (T)	28.4	69.3	19.8	8.1
12. There are no treatments that work for most mental illnesses. (F)	33.9	71.1	35.3	13.0
13. Students and other people who have a mental illness can't learn. (F)	84.1	86.8	8.6	4.8

Table 72. Another Depiction of Pretest & Posttest Percent Correct



"Not Sure" Responses. In addition to the analysis of the True-False answers on the Pretest and Posttest Knowledge Surveys, there is a “Not Sure” category of response. This response was offered on the survey because it essentially is a non-threatening option for students to choose when they in fact don’t know what the answer is. This is entirely possible for many students because they had not yet covered the material. Correct answers are probably the result of their own reading, good guessing, or luck. We wanted to establish that it was OK to say they did not know the material rather than to guess. Table 73 clearly shows that the number of "not sure" responses were reduced on the posttest. Guessing or uncertainty seems to have been diminished substantially by using the module.

Table 73. The Reduction in Not Sure Responses from Pretest to Posttest



Correlation. It is also useful in conceptualizing the relationship between pretest and posttest scores to view them as correlates. Essentially, this view is that the higher a score on the pretest, the higher the score on the posttest, or what is termed a "positive correlation". Since the variables are interval level measures a Pearson's r correlation coefficient was calculated. The Pearson's r for the pretest and posttest scores = .492, $p<.01$. This is a statistically significant correlation. Essentially, this means that when you take the square of the .494 figure to obtain r^2 you get the amount of variance in the posttest scores which is explained by the pretest scores. This $r^2 = .24$ or 24 percent of the variance in the posttest scores is explained by the preexisting level of knowledge which was measured by the pretest scores. It can be assumed that the remaining variance in the posttest scores (that is, most of it) is explained by other factors, such as exposure to the instructional materials and teaching the students have received.

Teacher Estimation of Achieving Learning Outcomes. The pretest and posttest scores are the primary method of determining the results of the evaluation. Another input for this evaluation is the judgments of the teachers on how effective the lessons and the overall module were in achieving the learning outcomes. Tables 19-62 give the distribution of responses from the teachers. Table 74 summarizes the results of those tables. The scale is 1= Strongly Disagree, 2=Disagree, 3=Disagree a Little, 4=Agree a Little, 5=Agree, 6=Strongly Agree.

The questions the teachers were answering were whether they agreed or disagreed that the lessons were effective in achieving the specific lesson learning outcomes. The table clearly shows that the teacher judgments fell predominantly in the Agree and Strongly Agree range on these statements. The lowest score was in Lesson 2: Outcome 3. This score, however, is still in the Agree range. The highest score was on Lesson 3: Outcome 2.

Table 74. Teachers Judgments on Achieving Learning Outcomes.

Learning Outcomes	Mean & (Std. dev.) (Scale = 1-6)
Lesson 1 Learning Outcomes	
1. Students should be able to explain that the brain is the part of the body that controls behavior, emotions, and thoughts.	5.42 (.72)
2. Students should realize that some changes in brain function cause changes in behavior, emotions, or thoughts that can last a short or a long time.	5.42 (.72)
3. Students should recognize that mental illnesses are associated with changes in brain activity.	5.29 (.75)
Lesson 2 Learning Outcomes	
1. Students should be able to explain that doctor's diagnose diseases based on a set of characteristic symptoms.	5.35 (.57)
2. Students should be able to define "disease".	5.30 (.77)
3. Students should recognize that diagnosing disease is an example of applying science processes.	4.74 (.81)
4. Students should be able to identify common symptoms of depression.	5.33 (.64)
5. Students should understand that changes in brain activity are associated with depression.	5.21 (.72)
Lesson 3 Learning Outcomes	
1. Students should recognize that mental illness is something that could happen to anyone.	5.42 (.65)
2. Students should be able to identify factors that influence a person's risk for developing a mental illness.	5.46 (.72)
3. Students should be able to explain that some factors increase a person's risk for mental illness and other factors decrease a person's risk for mental illness.	5.13 (1.04)
Lesson 4 Learning Outcomes	
1. Students should be able to explain that mental illnesses can be treated effectively using drugs and psychotherapy.	5.13 (.95)
2. Students should understand that treatment for mental illnesses allow individuals to function effectively in society.	5.00 (.59)
Lesson 5 Learning Outcomes	
1. Students should be able to synthesize what they have learned about mental illness from the previous lessons.	5.17 (1.03)
2. Students should be able to communicate their new understanding to others.	5.04 (1.15)
3. Students should be able to evaluate information about mental illness that other students have compiled for accuracy and relevance.	5.13 (1.06)

F. Teaching comments on the 5E nature of each lesson. In the TEM Survey we asked each teacher to respond to the primary "E" orientation in the lesson and whether we were effective in achieving the goal of engagement, exploration, explanation, elaboration, or evaluation. The 5E model is used in the development of all BSCS instructional materials (Bybee, 1997). There are many comments which can be found in their totality in Appendix H. In reviewing those comments there were some which stood out for each lesson. In Lesson 1, which was oriented toward "Engage", the teachers felt it was quite successful and that the students liked the computer zinger surprise and the email. In Lesson 2, which was an "Explore" and "Explain" lesson, they felt it was basically effective but needed more hands on activities for the much energized middle school population of students. Lesson 3, which is an "Explain" and "Elaborate" lesson there was a mixed response from quite effective to having problems because of reading level. Lesson 4, which is an "Elaborate" lesson, there was also a mixed response in comments from very effective with the additional information on diseases such as ADHD and schizophrenia to it being overkill from the Lesson 3. Lesson 5, which is an "Evaluate" lesson, was considered a resounding success and "incredibly effective".

G. Additional Analyses.

1. Field Test Site Comparisons. In analyzing the data it is also useful to break down differences between sampled units. Sites were selected to be in the field test because they differed in terms of geographic region and racial and ethnic composition of the student body. The primary sites received a field test orientation and the secondary sites did not. The t-tests reported are paired comparisons. Table 75 contains the result of these analyses.

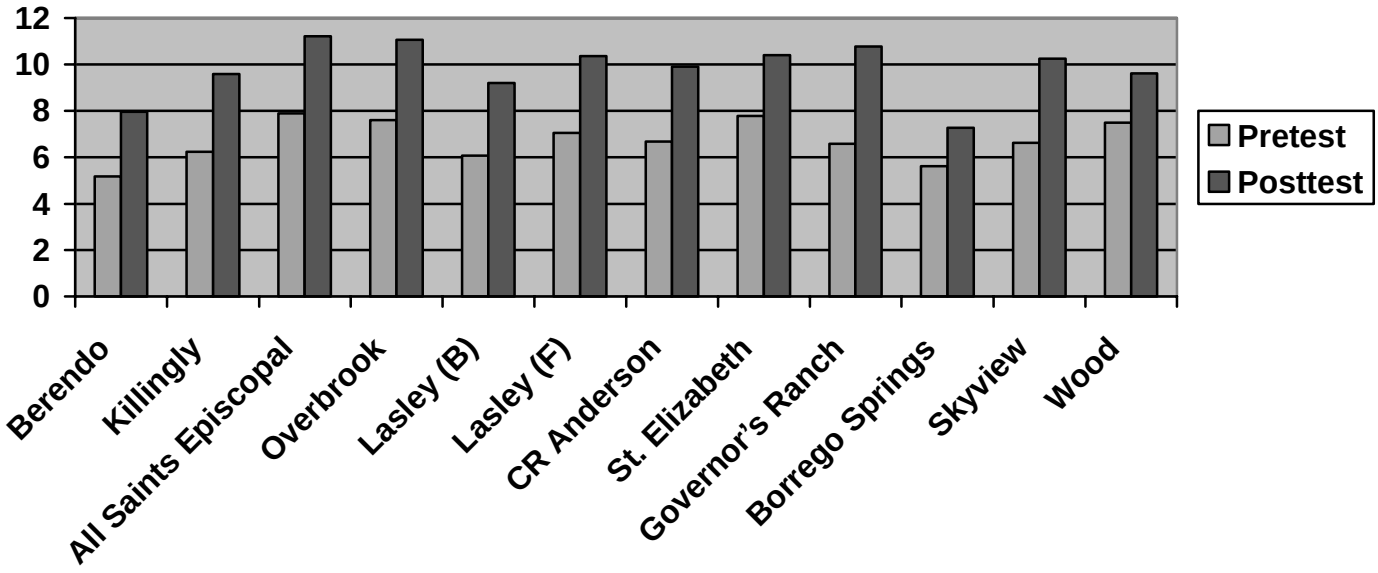
Table 75. Comparisons Between Field Test Sites on Pretest and Posttest results.

Field Test Site[1]	Primary or Secondary Site	SKS1 (Pretest) (Range =0-13)	SKS2 (Posttest) (Range =0-13)	df	t-value[2]
Berendo MS	Primary	5.18	7.96	111	12.95
Killingly Int.	Primary	6.24	9.58	84	12.20
All Saints Episcopal	Primary	7.90	11.22	50	9.03
Northshore Christian	Secondary	6.06	8.34	31	4.65
Overbrook School	Primary	7.61	11.07	86	15.40
Lasley (Bowden)	Primary	6.07	9.20	29	8.31
Lasley (Fleming)	Primary	7.05	10.35	19	6.18
CR Anderson MS	Primary	6.67	9.90	104	14.17
St. Elizabeth of Hungary	Primary	7.78	10.39	45	8.58
Governor's Ranch	Primary	6.57	10.76	20	7.93
Borrego Springs MS	Primary	5.62	7.26	67	5.55
Peru Jr. HS	Secondary	7.32	10.01	67	11.04
Skyview MS	Primary	6.62	10.24	28	9.02
Wood Intermediate	Primary	7.50	9.61	65	7.13
Nessacus MS	Secondary	7.77	10.68	94	13.58
St. Raphael School	Secondary	7.68	10.56	58	9.42
Broadalbin-Perth MS	Secondary	7.89	10.80	75	13.36
Scobey School	Secondary	5.55	9.18	10	5.59
Mount Olive MS	Secondary	7.07	10.68	59	11.59
Athens Area	Secondary	6.59	9.33	79	11.74
Catlin Gable	Secondary	7.13	10.62	46	7.79

1. He Dog, Berwick Academy, and John Baker did not return posttests so no t-test was possible. Tutt MS had only 2 cases which are insufficient for a t-test.
2. The t-tests were significant for all sites at the $p<.01$ level.

Another way of visualizing the results of comparing the schools is depicted in Table 76. This table shows the results of the pretest for each primary school along with its posttest results.

Table 76. Another Depiction of Pretest and Posttest Scores for Primary Site Schools



2. Stigma Research Questions. The SKS1 and SKS2 had questions on the back of them that asked the students to respond to a series of questions with the following scenario in mind:

> "There is a new student in your class who just came from another school. You have heard that this student has a mental illness."

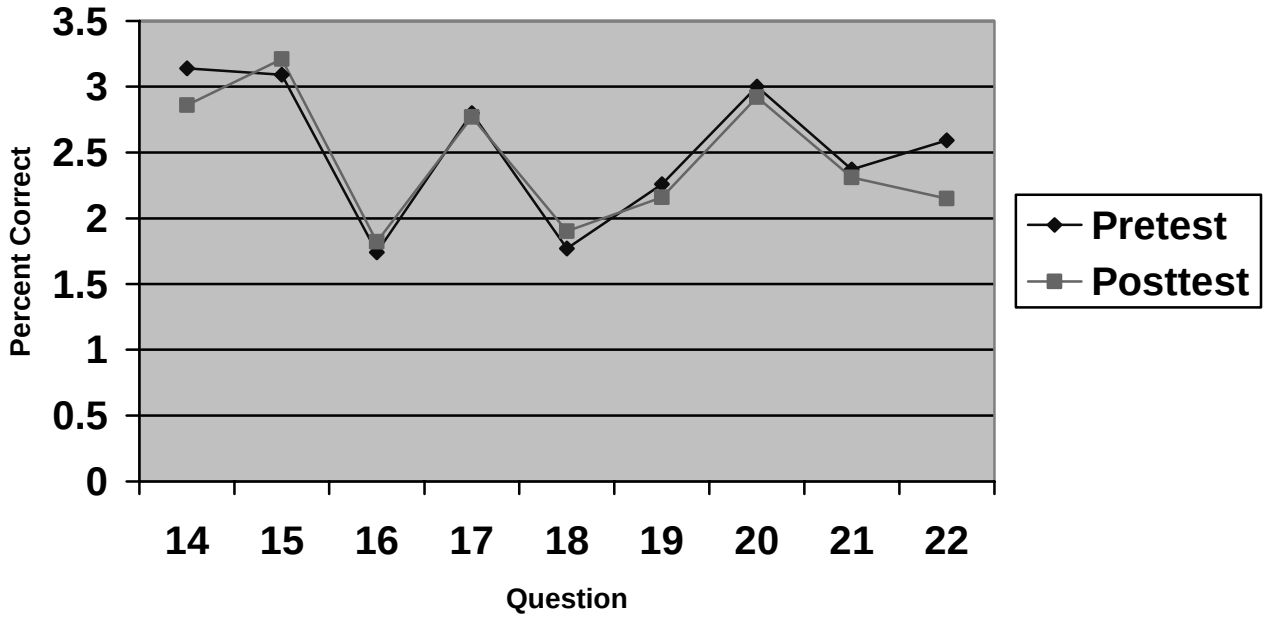
The students were then asked to answer a series of questions on a Likert scale of 1 (strongly disagree) to 7 (strongly agree). Table 77 shows the means on the pretest and posttest of these responses. Items 14, 15, 18, 20, and 22 were reverse scored. This yields scores which may be interpreted as being more stigmatizing when they are high and less stigmatizing about mental illness when the scores are low. The mean for the pretest group was 22.57. The mean for the posttest group was 21.99. A paired sample t-test which examined the difference between these means was significant ($t=2.821$, $df=1249$, $p<.01$). Although at first glance the difference between the means may not appear to be very great we would not expect much reduction in stigmatizing attitudes in the population, that is, our effect size would be small. With a large n, a directional t-test, a small effect size, and a low alpha (.01) for rejection of the null hypothesis (of no difference between the groups) we still have an estimate of power greater than .80 which suggests that these results would also be found in the greater student population.

These items actually do not compose a scale but have been treated as such for this preliminary investigation. They do, however, seem to be a good start for a scale that would measure "stigmatizing orientation towards mental illness" of students. It would be useful in subsequent research to establish reliability and validity for the scale to enhance its utility. Unlike opinions, attitudes are more entrenched and resistant to change. They vary in many ways such as salience, strength, and vectors to other attitudes. There has been much research on attitude change. Introducing new and dissonant information (as in our module) works to change attitudes in certain conditions but it may take time for those changes to be measurable by scales such as this one.

Table 77. Means on Answers on the Pretest and Posttest Stigma Qurestions on Mental Illness.
(An asterisk indicates that the posttest score was lower than the pretest score, i.e. less stigmatizing).

	Pretest Mean	Posttest Mean
14. The new student is not dangerous. (R)	3.14	2.86*
15. I feel sorry for the new student. (R)	3.09	3.21
16. The new student should be locked in a mental hospital.	1.74	1.82
17. I will try to stay away from the new student.	2.80	2.77*
18. It is not the student's fault if he or she has a mental illness. (R)	1.77	1.90
19. The new student makes me angry.	2.26	2.16*
20 I would help the new student. (R)	3.00	2.92*
21. I am scared of the new student.	2.37	2.31*
22. If I thought that I had a mental illness, I would talk with my parents about taking me to a doctor or counselor. (R)	2.59	2.15*

Table 78. Another Depiction of Pretest & Posttest Responses on the Stigma Questions



Section V. Discussion of Results

A. Field Test Demographics.

There inevitably is a conflict between the need for representative samples and the demands of the real world to identify and access willing teachers and students. In field tests, it is logical to identify teachers who are willing, capable, and have the laboratory resources to conduct the tests even though their classes might not yield representative samples. The goal of the evaluation is to test and evaluate new curriculum materials. What better set of subjects to test than those who can use it and articulate its advantages and disadvantages?

The primary field test sites were quite diverse. They varied in urban-suburban-rural, racial/ethnic composition, and geographic region of the U.S. The secondary sites were "opportunistic" in nature, that is, they were included because they applied not because they helped establish "inclusiveness" in any way. The secondary site data are included for all schools that returned full sets of materials (that is, a SEMS, pretest, and posttest (and a TEMS).

B. Evaluation Results from Students.

Utility of Student Results for Developers. In general the results in Tables 6 to 18 are most useful to the developers to obtain the impressions of the students on the different areas of evaluation. The percentage results on all lessons are more dispersed and have more disagreement than the teachers' answers for similar questions. It is suggested that the developers review the separate tables for each lesson and focus on those with the most dispersed and lowest average scores to find room for improvement. For example, Lesson 4 was perceived as the most difficult lesson by teachers and students. Lesson 1 was the least difficult according to teachers. Surprisingly, the overall module difficulty rating by students (4.57) was higher than any of the individual lesson difficulty ratings. Reading the comments by the students on these lessons should reveal why they thought this way and give clues to remedies for the materials. Each lesson has a table on the text-based question responses, the graphic content questions, and the lesson difficulty. In addition, lessons 1 and 2 have questions pertaining to the website activities. Comparing the same average of responses to questions across the lessons will give you an idea of how well the different lessons were evaluated by the students. Evaluation Snapshots in Tables 66-70 also give a quick and brief summary of the lessons that may be useful as a starting point.

Comments from Students. Appendix G contains the comments from the students on Lessons 1-5, the Most and Least Valuable Aspects of the Module, and Suggestions for Improvements. Because there are responses for 1556 students this is a large appendix. The Most Valuable Aspects of the Module included items such as the playing intern, the brochures, PET Scans, and web activities. The Least Valuable Aspects of the Module included items such as the too much reading, too easy (and too hard), too much writing and discussion. Suggestions for improvements included items such as more web activities and improving lesson 4. These items are only a sample of the many comments made by students. The developers should review the comments in each section to see the diversity and number of comments and to identify possible areas for change. Additionally, the evaluation snapshots provide a beginning point to understanding the results.

Lesson and Overall Module Difficulty for Students. The results on the level of difficulty judgments by students suggests that even though they are all close to or a little below the *just right* mark that lessons 3 and 4 were perceived as the least difficult and lesson 2 and 5 tied for the most difficult.

C. Evaluation Results from Teachers.

Utility of Teacher Results for Developers. Even a brief perusal of the results depicted in Tables 19-65 clearly shows that the results from the teachers are less dispersed and focused more in the *agree* range. The average for virtually all the questions was higher than the results for similar questions asked of the students. Again, the task for the developers in examining these tables is to focus on the low scores and most dispersed sets of responses to statements. In so doing, they should identify likely candidates for modifications and improvements in the materials.

Comments from Teachers. Appendix H contains the comments from the teachers on Lessons 1-5, the Most and Least Valuable Aspects of the Module, and Suggestions for Improvements. The Most Valuable Aspects of the Module included items such as the "Zinger", the brochure, PET Scans, and incorporating inquiry. Least Valuable Aspects of the Module included items such as redundancy from Lesson 3 to 4, confusion in using the Risk Meter, and reading difficulty for ESL students. Suggestions for improvements included items such as improving Lesson 4, more web activities, and including a glossary of terms. These items are only a sample of the comments made by teachers. The developers should review the comments in each section to identify candidate areas for changes. The evaluation snapshots contain a brief overview of the lesson and teacher results and is a good place to start. Perusing the entire appendix of comments, however, would be of great use for the developers.

Comparison of Teacher Ratings on Lessons. The Snapshot tables contain the results of calculating the averages for the various sets of questions on the different evaluation dimensions. Most of the results are in the *agree* range on these items. However, the developer can identify strong and weak areas of lessons by comparing the lessons to each other, much as the teachers and students did. In this manner, the text-based content of lesson 2 was evaluated lowest, the organization of lesson 4 was evaluated lowest, and so forth. Interestingly, as opposed to the students, the teachers thought that lesson 4 was the most difficult and lesson 1 was the least difficult. It should be noted however, that most of the difficulty score averages from the teachers were near or below the "just right" score of 5.

Teacher Background Materials. The questions asking for evaluation information on the Teacher Background Materials yielded positive results. The results in Tables 27, 36, 44, 52, and 60 suggest that the materials were useful and well-used.

D. Pretest and Posttest Evaluation Results.

The Pretest and Posttest evaluation consists of examination of the differences between the student's scores on a "Student Knowledge Survey". The items were statements which the students could indicate True, False, or Not Sure. Appendix E contains a copy of the survey. The students took the first Knowledge survey (the Pretest) before exposure to the materials and the Posttest after using the materials. Additionally, analysis of the "Not Sure" responses was conducted as well as the teacher's estimates of the success in achieving learning outcomes. Tables 71 and 72 contain the student knowledge questions and the percentage of correct responses on the pretest and posttest.

The results were uniformly positive. Use of the materials yielded statistically significant increases in knowledge as measured by the student knowledge surveys. Additionally, the teacher estimates of effectiveness in achieving learning outcomes were all in the agree range. The "Not Sure" responses were substantially reduced on the posttest indicating more comfort, familiarity, and correct information from the students.

Section VI. Conclusions and Recommendations

A. Conclusions

The evaluation of the Science of Mental Illness Module clearly shows that the module has been very well crafted and most of the modifications will be of a fine-tuning nature not an overhaul. Student and teachers indicate that Lesson 5 is the most effective lesson while Lesson 4 needs some work. The comments in the appendices should be examined by the developers and overlaid with the results of the site visits by staff to obtain most likely areas for improvement to the module.

The evaluation results suggest that the module was very effective overall and yielded statistically significant changes in scores from pretest to posttest results as well as high judgments by teachers of the effectiveness in achieving learning outcomes. Keep up the good work!

The initial results on the stigma research questions suggests that we should continue along that path.

B. General Comments Regarding the Mental Illness Module

Lesson Improvements. A reading of this report and the appendices will yield many insights for the developers in ways to improve the materials. It is clear, however, that the module was successful. Lesson 4 needs improvement. It was also clear that students and teachers wanted more web activities.

Levels of Analysis. Mental illness is one of those topics which is not well understood by focusing on one or two levels of analysis. It is not only a biological or psychological problem or issue. It is also a function of how the society defines it and deals with it which makes it a social problem as well. It is clear that causes and solutions can be found at the physiological and psychological levels of analysis. It is also clear that societies differ and change over time in how they define, contribute to, and offer solutions for mental illness. It would be useful to include the social dimension of mental illness. This could be an addition or change to Lesson 3 or 4 which provide "elaboration" on mental illness.

Access by Persons with Disabilities (PWDs). It is recommended that we create curriculum materials, in all their various forms, in ways that allows access by persons with disabilities (PWDs). One of the populations of American society which will benefit greatly from technological advances in computers, CD-ROMs, DVDs, websites and internet access in general are persons with disabilities. The Americans with Disabilities Act (ADA) was passed in 1993 and sets standards and mechanisms for access for PWDs. The Department of Education has a number of agencies working to improve access by PWDs such as the National Institute on Disability and Rehabilitation Research (NIDRR). Also, Congress passed the Workforce Investment Act in 1998 which mandates changes in software and peripheral devices to allow access by PWDs. This Act includes the Rehabilitation Act Amendments of 1998. This Act mandates, in section 508, that when Federal agencies develop, procure, maintain, or use electronic technology, that they ensure it is accessible to PWDs.

We should consider enabling access to our curriculum materials by PWDs and including the cost and time of doing so in our proposals. The modifications are somewhat different for different types of disabilities and often depend on unique technology which the PWD has at their location (such as software on their computer which enlarges text for visually impaired persons). The software for websites can be written in such a fashion as to enable the use of the different input and output devices used by PWDs. Usually, websites are not so constructed. The nonprofit Center for Applied Special Technology (CAST) has procedures to follow to do this and subsequently receive their “Bobby-Approved” status.

This approval indicates to the disabled community that certain standards have been met and they will likely have no trouble accessing the site <www.cast.org>. These types of innovations in our curriculum materials, whether stand alone, such as a CD-ROM, or installed and accessible at our website, would make the materials available to a much wider audience.

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